

# GARDEN AND FOREST

A JOURNAL OF

HORTICULTURE, LANDSCAPE ART AND FORESTRY

Conducted by

CHARLES S. SARGENT

Director of the Arnold Arboretum, Professor of Arboriculture in Harvard College, etc.

*ILLUSTRATED*

VOLUME I. FEBRUARY TO DECEMBER, 1888

New York

THE GARDEN AND FOREST PUBLISHING CO.

1888

514  
1888

42942

Copyright, 1888, by THE GARDEN AND FOREST PUBLISHING CO.

---

*All rights reserved.*

## INDEX TO VOLUME I.

The asterisk (\*) denotes that the subject is illustrated.

- Abies amabilis*..... 10  
 — *Apollinis*..... 120  
 — *Cephalonica*..... 120  
 — *Cilicica*..... 120  
 — *Nordmanniana*..... 120  
 — *pectinata*..... 120  
 — *Pinsapo*..... 494  
 — *subalpina*..... 58  
 — *Webbiana*..... 120  
*Abutilon Sinense*..... 120  
*Acacia constricta*..... 524  
 — *decurrens*..... 35  
 — *pubescens*..... 82  
*Acalypha triumphans*..... 479  
*Acanthopanax spinosum*..... 248  
*Acer dasycarpum*..... 466  
 — *Ginnala*..... 212, 453  
 — *Japonicum*..... 453  
 — *pictum*..... 312  
 — *latum*..... 312  
 — *Colchicum rubrum*..... 312  
 — *polymorphum*..... 312, 453  
 — *Tartaricum*..... 212, 453  
*Achras Bahamensis*..... 527  
 — *Sapota*..... 527  
*Acidanthera bicolor\**..... 484  
*Actinidia polygama*..... 273  
 — *volubilis*..... 174  
*Actinopteris radiata*..... 9  
*Adansonia Gregorii*..... 204  
*Adelaide*, botanical garden in..... 480  
*Adelges abieticolens*..... 100  
 — *abietis*..... 100  
*Adiantum cuneatum*..... 404, 522, 523  
 — *decorum*..... 523  
 — *Farleyense*..... 9, 494, 474, 523  
 — *Edgeworthii*..... 474  
 — *gracilis*..... 474  
 — *gracillimum*..... 522  
 — *Pectotilli*..... 404  
 — *pedatum*..... 200, 341  
 — *Reginae*..... 4  
 — *Victoriae*..... 404  
 — *Weigandii*..... 404, 522  
 — *Williamsi*..... 404  
*Adinotinus Sinensis*..... 120  
*Adirondack forests*, the..... 49, 73, 87  
*Adolfia infesta*..... 524  
*Aelodes quinquevulnerum*..... 428  
 — *Rohmannianum*..... 498  
 — *Williamsi*..... 208  
*Aesculus rubicunda*..... 220  
 — *turbinata*..... 491  
*Aethionema coridifolium*..... 237  
*Afghanistan*, new plants from..... 6  
*Agave Elementiana*..... 491  
*Agricultural literature*..... 157  
*Ailanthus*..... 179, 239, 385, 500  
*Akebia quinata*..... 42, 441  
*Alder*, Black..... 182, 261, 453  
*Alfalfa*..... 407  
*Algae on animals*..... 99  
*Alhambra*, Gardens of the..... 255  
*Allium coeruleum*..... 225  
 — *Moly*..... 225  
 — *Neapolitanum*..... 224  
 — *Pedemontanum*..... 224  
 — *Suworowi*..... 227  
*Alnus rubra*..... 59  
 — *serrulata*..... 494  
*Aloe Hilderbrandtii*..... 60  
*Alonzoa Warszewiczii*..... 473  
*Alpenia officinarum*..... 227  
*Alyssum gemmense*..... 261  
*Amaryllis aurea*..... 68  
 — *Contessa Mariana Cambray*..... 204  
 — *Digny*..... 204  
 — *reticulata*..... 436  
*Amarylises*..... 520  
*Amasonia calycina*..... 436  
*Amelanchier alnifolia\**..... 185, 201  
 — *Asiatica*..... 201  
 — *oligocarpa\**..... 245  
 — *vulgaris*..... 201  
*American plants in France*..... 482  
*Amorpha canescens*..... 285  
*Amorpha nallus virosus*..... 60  
*Andromeda floribunda*..... 115, 154  
 — *Japonica*..... 129  
 — *ligustrina*..... 182, 261  
 — *Mariana*..... 182, 237, 454  
 — *polifolia*..... 179  
 — *speciosa*..... 248  
*Androsaceum hircinum*..... 333  
*Anemone Japonica*..... 462, 464  
 — *canonosa*..... 153  
 — *Pinnatifida*..... 153  
 — *ranunculoides*..... 177  
*Anglomania*, in park-making..... 64  
*Angræcum*, new variety of..... 16  
 — *caudatum*..... 428  
 — *densum*..... 248  
 — *distichum*..... 428  
 — *eburneum*..... 475  
 — *falcatum*..... 248  
 — *Leonii*..... 379  
 — *Sanderianum*..... 503  
 — *Scottianum*..... 294, 475  
*Anguloa Clowesii*..... 209  
 — *eburnea*..... 209  
 — *intermedia*..... 209  
 — *Ruckeri*..... 209, 315  
 — *uniflora*..... 308  
*Anisacanthus insignis*..... 524  
*Annuals for cut flowers*..... 45  
 — *for a succession of flowers*..... 186  
*Anthurium Andreanum*..... 45  
 — *Chamberlainii*..... 186  
 — *Desmetianum*..... 245  
 — *Scherzerianum*..... 245  
*Antirrhinum Nuttallianum*..... 347  
*Ants*, destruction of..... 443  
*Appeal for pretty plants*, an..... 524  
*Apples*, autumn..... 377, 521  
 — *early*..... 377  
 — *Japanese\**..... 52  
 — *summer*..... 485  
 — *winter*..... 400  
*Apricots*, varieties of..... 165  
*Aquilegia Canadensis*..... 114, 150, 199  
 — *Chrysantha*..... 114  
 — *coerulea*..... 114  
 — *formosa*..... 114  
 — *glandulosa*..... 199  
 — *longissima\**..... 37, 99, 141  
 — *vulgaris*..... 114  
*Aquilegia hybrid*..... 114  
*Aralia Cashimerica*..... 320  
 — *bispida*..... 286  
 — *Maximowiczii*..... 256  
 — *spinosa*..... 415  
*Araucaria imbricata*..... 101  
 — *Cunninghamii glauca*..... 276  
*Araucaria gracilens*..... 407  
*Arbor day*..... 73  
*Arbutus petiolaris*..... 441  
 — *transplanting the*..... 105  
 — *trailing*..... 154  
 — *Xalapensis*..... 441  
*Argemone polyphyllos tomentosa*..... 375  
*Aristolochia elegans*..... 329  
 — *Westlandii*..... 371  
*Armeria vulgaris*..... 271  
*Arnebia cornuta*..... 6  
 — *echinoides*..... 189  
*Arnold Arboretum*, entrance to..... 17  
 — *notes from the*..... 117, 129, 153, 165, 178, 189, 200, 212, 225, 236, 239, 248, 260, 272, 285, 296, 309, 332, 344, 356, 440, 453, 464  
*Arrow-head*..... 243  
*Arrow-arum*..... 243  
*Artemisia poisons in the orchard*..... 9  
 — *on Elm trees*..... 151  
*Artemisia filifolia*..... 524  
*Artichoke*, Globe..... 127, 513  
*Artificial water\**..... 8  
*Artistic aspect of trees*..... 218, 239, 242, 373, 493  
*Asarum Canadense*..... 177  
 — *macranthum*..... 407  
*Asclepias atrosanguinea*..... 356  
*Ash*, the..... 106, 142, 466, 500  
*Ash*, the Green..... 215  
*Asimina triloba*..... 514  
*Asparagus*..... 115  
 — *plumosus*..... 33  
*Aspen*..... 58  
*Asphodelus acaulis*..... 299  
*Aspidium acrostichoides*..... 353  
 — *aculeatum*..... 353  
 — *bootii*..... 353  
 — *cristatum*..... 353  
 — *Filix-mas*..... 352  
 — *fragrans*..... 352  
 — *Goldianum*..... 352  
 — *Lonchitis*..... 353  
 — *marginalis*..... 352  
 — *muticum*..... 353  
 — *Nevadense*..... 342  
 — *Noveboracense*..... 342  
 — *spinulosum*..... 353  
 — *thelypteris*..... 342  
*Asplenium angustifolium*..... 341  
 — *eburneum*..... 341  
 — *Filix-foemina*..... 342  
 — *Ruta-muraria*..... 341  
 — *thelypteris*..... 341  
 — *Trichomanes*..... 341  
 — *viride*..... 341  
*Aster alpinus*..... 348  
 — *Amellus*..... 499  
 — *concolor*..... 435  
 — *Ibericus*..... 499  
 — *Nive Angliae*..... 462  
 — *pectabilis*..... 435  
 — *Townsendii*..... 425  
*Aster*, China..... 356, 380  
 — *native*, as garden plants..... 428  
 — *park at*..... 36  
 — *forestry congress at*..... 515  
*Attar of roses*..... 504  
*Aubretia deltoidea*..... 189  
*Aubricula*, the..... 504  
*Autumn effect*, planting for..... 410  
 — *flowers*..... 499  
 — *work among trees*..... 421  
*Axe*, do not spare the..... 433  
*Azalea albertensis*..... 36, 89, 479  
 — *Indica*..... 107  
 — *occidentalis*..... 291  
 — *viscosa*..... 290  
*Azaleas*, forcing..... 290, 310  
 — *Ghent*..... 38  
*Baccharis angustifolia*..... 524  
 — *glutinosa*..... 524  
 — *halimifolia*..... 495  
*Baden-Baden*, novelties at..... 233  
*Bahia confertiflora*..... 347  
*Balcony flower-boxes*..... 158  
*Balsam*, the..... 130  
*Banana*, a hardy..... 363  
*Banded hickory borer*, the..... 148  
*Banks and slopes*, treatment of..... 326  
*Barbarea*..... 513  
*Bary*, Anton de..... 415  
*Bartonia tenella*..... 421  
*Basket culture*, ferns for..... 304  
*Bauhinia uniflora*..... 524  
*Beans*, string..... 484  
*Beech*, a weeping..... 32  
*Beetles*..... 172  
*Befaria glauca*..... 496  
*Begonia geranioides*..... 371  
 — *Lubbersii*..... 108  
 — *octopetala*..... 509  
 — *semperflorens gigantea*..... 492  
 — *Socotrana*..... 485  
*Begonias*, half-hardy..... 7, 92  
 — *hardy*..... 41  
 — *new race of hybrid*..... 41  
 — *new tuberous*..... 256  
*Benthamia Japonica*..... 234  
*Benzine for destroying grubs*..... 516  
*Berberis Canadensis*..... 236  
 — *Chinensis*..... 440, 464  
 — *concinna*..... 236, 237, 440  
 — *Cretica*..... 236  
 — *emarginata*..... 236, 440, 464  
 — *Fendleri\**..... 486  
 — *Fremontii\**..... 496  
 — *nervosa*..... 202  
 — *Sinensis*..... 236  
 — *Thunbergii*..... 440, 464  
 — *trifoliolata*..... 524  
*Berberis umbellata*..... 236  
 — *vulgaris*..... 189, 236, 416, 440  
*Bertolonia marmorata*..... 68  
*Betula papyrifera*..... 59  
*Bidens chrysanthemoides*..... 435  
*Bigelovia pulchella*..... 524  
*Bignonia Tweedleana*..... 148  
*Biota Sieboldi*..... 36  
*Birch*, the..... 59  
*Birds and strawberries*..... 176  
*Blackberries*..... 105, 494, 519  
*Bladderwort*..... 243  
*Blood-root*, the..... 45, 141  
*Blueberry*, the..... 184  
*Blue-flag*, the..... 182, 493  
*Blunders concerning plants*..... 215  
*Bollea Wendlandiana*..... 315  
*Borer*, work of a..... 172  
*Boronia heterophylla*..... 89  
 — *megastigma*..... 56, 70  
*Bossier*..... 494  
*Boston public garden*..... 345  
 — *harbor*, tree planting on..... 24  
*Botanic garden for N. Y. City*..... 517  
*Botany*, study of, by horticulturists..... 62  
*Botrychium Virginianum*..... 354  
*Bowman's root*..... 225  
*Brasenia peltata*..... 243  
*Brickellia laciniata*..... 524  
*Bridge at Leatherton, England\**..... 52  
 — *in the Thiergarten, Berlin\**..... 327  
*Brodiaea Bridgesii\**..... 125  
 — *Howellii*..... 120  
 — *uniflora*..... 21  
*Broom*..... 213  
*Brussels sprouts*..... 513  
*Buck-eye*, the red..... 224  
*Buddleia*..... 297, 524  
*Buffalo*, project for public park in..... 457  
*Buitenzorg*, water lilies in the garden at..... 241  
*Bulbs*, Dutch..... 115, 354  
 — *hints about*..... 9, 33  
 — *spring-flowering\**..... 302  
*Burr Oak*..... 382  
*Button-bush*..... 290, 310  
*Buzzard's Bay*, plants of..... 327  

### C.

*Cabbage-leaf*, malformation of..... 296, 392  
*Cadrania triloba*..... 527  
*Caesalpinia Japonica*..... 267, 503  
*Calandrinia oppositifolia*..... 593  
*Calanthes*..... 4, 68, 491  
*Calceolarias*..... 126  
*California*, Christmas flora of..... 28  
 — *forestry*, 361, 369, 380, 392, 404, 420  
 — *garden*, a..... 395  
 — *Southern*, useful plants of..... 414  
 — *State Board of Horticulture*..... 262  
 — *trees of*..... 22, 198  
 — *woods in autumn*..... 422  
*Californian sand-ridge*, a..... 374  
*Callicarpa Americana*..... 333  
 — *purpurea*..... 333, 429  
*Calluna vulgaris*..... 296, 442  
*Calliophorus flavus*..... 20  
*Calluna palustris*..... 150  
*Calycanthus floridus*..... 285  
 — *glauca*..... 285  
 — *viridatus*..... 285  
*Calypso arealis*..... 209  
*Camassia Eschickii\**..... 172  
*Camellia Sasanqua*..... 156  
*Campanula Campanulata*..... 234  
 — *medium*..... 234  
 — *poliviformis*..... 151  
 — *persicifolia*..... 150  
 — *rotundifolia*..... 151  
 — *turbinata*..... 151  
*Campylosorus rhizophyllus*..... 342  
*Canadian forest preserves*..... 219  
*Canker-worms*..... 51  
*Canna Indica*..... 304  
*Cannas*, notes on..... 378, 390  
*Canterbury Bells*..... 234  
*Caragana pygmaea*..... 237  
 — *spinosa*..... 237  
*Carnations*..... 21

- Carpentaria Californica..... 292  
 Carya porcina..... 190  
 tomentosa..... 190, 500  
 Cayopteris mastacanthus..... 20  
 Carota sobolifera..... 108  
 Cassandra calyculata..... 154  
 Cassia coquimbensis..... 275  
 Vissleri..... 524  
 Castilleja elastica..... 526  
 Catalpa bignonioides..... 466, 500  
 Kaemferi..... 500  
 speciosa..... 379, 500  
 Catasetum Bungerothii..... 275, 516  
 Cat-tails..... 495  
 Cattleya Amesiana..... 315  
 Bowringiana..... 308, 428, 484  
 chrysotoxa..... 495  
 Dowiana..... 475  
 Exoniensis..... 413  
 Gaskelliana..... 271, 520  
 Gigas\*..... 281, 436, 475  
 granulosa asperata..... 340  
 Harrisii..... 472  
 hybrida picta..... 367  
 labiata..... 497  
 Lamberhurst..... 472  
 lutea..... 120  
 Massalana..... 105  
 Mendellii..... 208, 255  
 Mossiae..... 255  
 Percival's..... 16  
 porphyrites..... 436  
 Rothschildiana..... 208  
 Sanderiana..... 211  
 Schofieldiana..... 316  
 Schroederiana..... 340  
 Skinneri..... 188, 484  
 speciosissima..... 271  
 Wageri..... 188, 244, 248  
 Walkeriana..... 347  
 Ceanothus..... 7, 248, 374  
 Cedar, the Red..... 314  
 the Yellow..... 33  
 Celastrus scandens..... 444  
 Celery..... 224, 294, 484  
 Celtis occidentalis..... 465  
 var. reticulata..... 166  
 Cemeteries..... 76, 109, 147  
 Centaureids..... 473  
 Centennial of the Fuchsia..... 423  
 Central Park, Minneapolis\*..... 374  
 N. Y., meadows in\*..... 124  
 historic trees and shrubs for..... 144  
 proposed speed-road in..... 37  
 trees in..... 230  
 view in\*..... 30  
 work in..... 120  
 Cephaelis tomentosa..... 527  
 Cephalanthus occidentalis..... 290, 310  
 Cerasus Capronia..... 178  
 pseudo-cerasus..... 178  
 Sieboldi..... 178  
 Watererii..... 178  
 Ceratophylla triloba..... 48  
 Cercis Canadensis..... 220  
 Chinensis..... 220  
 siliquastrum..... 220  
 Cercocarpus parvifolius..... 524  
 Cereus grandiflorus..... 163  
 Chaenactis tenuifolia..... 347  
 Chamaecyparis obtusa..... 33  
 Chamaecyparis excelsa..... 231  
 robusta..... 231  
 Charleston Hall, court-yard of\*..... 171  
 Charles River at Wellesley\*..... 422  
 Cherokee Rose..... 234, 370  
 Cherry plum..... 178  
 Chestnut, Spanish..... 131, 191  
 Chestnuts..... 500  
 Chimaphila maculata..... 519  
 umbellata..... 519  
 China Asters..... 350, 380  
 Chinese horticulture in N. Y..... 483  
 Chiogenes hispida..... 57  
 Chionanthus Virginica..... 291  
 Chion cinctus\*..... 148  
 Chionodoxa Luciae..... 127, 494  
 Chionophila Jamesii\*..... 79  
 Chironia peduncularis..... 407  
 Choisy ternata..... 219, 348  
 Chokeberry..... 212  
 Choro-Gi..... 4  
 Christmas green..... 508  
 in the Pines..... 178  
 Chrysanthemum Exhibition, Boston..... 467  
 Germantown..... 456  
 New York..... 478  
 Philadelphia..... 467  
 Chrysanthemum, Baron d'Aves..... 228  
 C. Jules Barigny..... 228  
 Lilian M. Bird\*..... 512  
 Mrs. Alpheus Hardy\*..... 5  
 Chrysanthemums, new variety of\*..... 168  
 notes on, 33, 81, 164, 378, 402, 445  
 497, 472, 473, 481, 492, 511, 516, 523  
 a garden of\*..... 522  
 Chrysosplenium macrophyllum..... 120  
 Chysis Chelsoii..... 211  
 Cinchona Calisaya..... 503  
 Cinerarias, new varieties..... 113  
 Cinnamon-fern..... 243, 354  
 Cinque-foil..... 285  
 Cissus Japonica..... 357  
 Citrons..... 484  
 City Hall Park, N. Y., attack on..... 134  
 Claytonia Caroliniana..... 177  
 Virginiana..... 177, 211  
 Clematis coccinea..... 297, 371, 441  
 Clematis crispa..... 344  
 Davidiana..... 309  
 Flammula..... 357  
 graveolens..... 297  
 integrifolia..... 297  
 orientalis..... 297  
 Pierotti..... 357  
 Pitcheri..... 344  
 verticillaris..... 189  
 Virginiana..... 344  
 Cleome pungens..... 435  
 Clerodendron Thompsonae..... 487  
 Clethra acuminata..... 333  
 alnifolia..... 290, 291  
 Climate of Minnesota..... 203  
 on the Prairies..... 159  
 Clintonia borealis..... 200  
 Club-moss..... 519  
 Cobaea scandens..... 473  
 Cocanots in Florida..... 492  
 Coslogyne corrugata..... 344  
 cristata..... 68, 124  
 Dayana..... 271  
 gramminifolia..... 300  
 Massangeana..... 60  
 pandurata..... 284  
 Sanderiana..... 340  
 speciosa..... 340  
 Coffee, Liberian..... 526  
 Colchicum autumnale..... 499  
 speciosum..... 499  
 Cold climates, fruits for..... 498  
 Colubrina Texensis..... 524  
 Columbine..... 114  
 Consuming insects\*..... 100  
 Coniferous tree seeds, longevity of..... 250  
 Conifers, propagation of..... 47, 436  
 Cultivation of..... 64  
 Conoclinium coelestinum..... 362  
 Cousvarties, heating of..... 407  
 Convolvulus tenuissimus..... 407  
 Corchorus, the..... 190  
 Cordyline indica..... 148, 204  
 Corema Conrad..... 129  
 Coreopsis coronata..... 473  
 lanceolata..... 362  
 rosea..... 362  
 tinctoria..... 473  
 Cornus asperifolia..... 273  
 florida..... 440  
 mascula..... 129  
 officinalis..... 129  
 paniculata..... 249  
 sanguinea..... 464  
 sericea..... 260  
 stonifera..... 249  
 Corydalis solida..... 153  
 Corylopsis pauciflora..... 205  
 Corypha umbraculifera..... 203  
 Corythuca arcuata..... 438  
 Cosmos bipinnatus..... 477  
 hybridus..... 477  
 Cotonaster denticulata..... 24  
 Cottonwoods, the\*..... 51, 107, 254  
 Court-yard, Charlestown Hall\*..... 171  
 Cowania Mexicana..... 524  
 Cowslip, Virginia..... 177  
 Crab-apple, the American..... 212  
 Cranberries..... 185, 519  
 Crassula lactea..... 108  
 Crataegus coccinea..... 201, 249  
 cordata..... 249, 465  
 Douglasii..... 201  
 Lelandi..... 496  
 nigra..... 201  
 pinnatifida..... 237  
 purpurea..... 201  
 sanguinea..... 201  
 subvillosa..... 201  
 tomentosa..... 249  
 Cress, upland..... 513  
 Crinum giganteum..... 329  
 Zelanicum..... 452  
 Crocosmia aurea..... 503  
 Crocus Haussknechtii..... 408  
 Crocus..... 496  
 Cryptogramme acrostichoides..... 341  
 Cucumber, white..... 484  
 Curculio, the..... 187  
 Currant, Black..... 190  
 cultivation of..... 282  
 Fay's prolific..... 356  
 Missouri..... 105, 178, 239, 416  
 Red Fruited..... 165, 169  
 Cuscuta glomerata..... 495  
 tenuiflora..... 495  
 Cut flowers and growing plants, 110, 258  
 annuals for..... 45  
 green-house climbers for..... 487  
 Cut-worms..... 177  
 Cycas revoluta..... 232  
 Cydonia Japonica..... 232  
 Cymbidium Hookerianum..... 475  
 Mastersi album..... 514  
 Cyperorchis elegans..... 300  
 Cypress, Bald..... 123  
 shingles..... 314  
 Southern..... 500  
 Cyrtopodium acaule..... 151, 188, 235  
 bellatulum, 198, 208, 244, 256, 288  
 Californicum\*..... 281  
 caudatum..... 246, 247  
 Dayanum..... 211  
 Elliottianum..... 484  
 fasciculatum\*..... 90  
 Cyrtopodium Godefroyae..... 208, 211  
 Insigne..... 467, 479, 511  
 Lawrenceanum..... 211  
 Leeanum maculatum..... 4  
 Marshallianum..... 485  
 montanum..... 138  
 Morganiae..... 340  
 Mossiae..... 211  
 nivum..... 211  
 Parishi..... 248  
 parviflorum..... 138, 200, 235  
 pubescens..... 138, 151, 188, 235  
 Rothschildianum..... 484  
 Sanderianum..... 484  
 Schroderae..... 247  
 spectabile..... 151, 225, 235  
 Spicerianum..... 479, 513  
 Stonei..... 294  
 Cyrtanthus lutescens..... 519  
 Mackenii..... 519  
 Cyrtopodium Saintlegerianum..... 39, 371  
 Cystopteris bulbifera..... 353  
 fragilis..... 353  
 Cytisus albus..... 213  
 biflorus..... 213  
 Canariensis..... 50  
 capitatus..... 273  
 nigricans..... 273  
 purpureus..... 56  
 scoparius..... 213  
 Daboccea polifolia..... 285  
 Daffodils..... 49, 510  
 Dahlia, northern limit of..... 7  
 Imperialis..... 496  
 Dahlias, notes on..... 376  
 Daisies, Michaelmas..... 499  
 Daphne alpina..... 236  
 Cucurum..... 441  
 Genkwa..... 190  
 Mezereum..... 129  
 Daphniphyllum glaucescens..... 207  
 Daremia catalpa..... 500  
 Date tree..... 231  
 Davallia tenuifolia..... 404, 523  
 Davillia aculeata..... 503  
 Deciduous forest trees from seed..... 23  
 Decumaria densa..... 120  
 Delphinium viride\*..... 149  
 Zalm..... 6  
 Dendrolium Bensoniae..... 268  
 Derris..... 248  
 clavatum..... 227  
 crassinode superbum..... 125  
 Dalhousieanum..... 209  
 Deard..... 236  
 Huttonii..... 209  
 macrophyllum..... 479  
 Wardianum..... 475  
 Deutzia parviflora\*..... 303  
 Dicentra Cucullaria..... 153, 177  
 eximia..... 177  
 Michorisandra pubescens..... 204  
 Dicksonia pilosiuscula..... 354  
 Didymus leptocladus..... 524  
 Diervilla sessilifolia..... 273  
 affida..... 273  
 Diospyros Virginiana..... 491, 514  
 Dipladenia Bolivensis..... 329  
 Diplothemum campestre..... 231  
 Disa grammifolia..... 388  
 grandiflora..... 208, 520  
 racemosa..... 208, 407, 520  
 Disease of certain Japanese shrubs, a..... 194  
 of nursery stock..... 194  
 Do not spare the..... 433  
 Dodder..... 495  
 Dodge City, forestry station at..... 158  
 Dogtooth Violets..... 177, 316  
 Dogwood..... 63, 243, 249  
 Domain, forests of nation..... 97  
 Domestication of wild fruits..... 195  
 Doorways of villas..... 133  
 Doronicum Caucasicum..... 150  
 Douglasia longivata..... 24, 228  
 Dracaena australis..... 432  
 Drives and walks..... 193  
 Drosera longifolia..... 143  
 Dryocates affaber..... 141  
 Dunes, planting the..... 35  
 Dyeing flowers..... 14  
 Easter flowers in New York..... 86  
 Eburia quadrigemina..... 172  
 Echinocactus Haselbergii..... 371  
 Eichornia tricolor..... 328  
 Elaeagnus longipes\*..... 202, 499  
 Elder, box..... 254  
 common..... 249  
 Mexican..... 106  
 scarlet-berried..... 256  
 Elm, Japanese..... 231, 312  
 Elms..... 516  
 Elm trees, arsenical poisons on..... 151  
 Empusae..... 159  
 English flower gardens..... 399  
 Enkianthus Hinalaicus..... 503  
 Ephedra pedunculata..... 524  
 trifurca..... 524  
 Epidendrum atropurpureum..... 267  
 evectum..... 209  
 macrochilum..... 267  
 medusae..... 67  
 O'Brienianum..... 209  
 Epidendrum radicans..... 269  
 Epigaea repens..... 154  
 Eremurus Olgae..... 388  
 Erica cornea..... 129  
 tetralix..... 260  
 Erigeron speciosum..... 473  
 Eriobotrya Japonica..... 514  
 Eriodermis intermedium..... 56  
 Eryngium, varieties of..... 206  
 Erythronium grandiflorum..... 177, 228  
 Hendersonii\*..... 264, 316, 365  
 Eschscholtzia Californica..... 375  
 Eucalyptus calophylla..... 427  
 globulus..... 83  
 unigera..... 168  
 Viminalis..... 503  
 Eucharis Amaranica..... 511  
 Eutalia Japonica..... 267  
 Euonymus alatus..... 212, 453  
 atropurpureus..... 273, 453  
 Euphorbia..... 453  
 European forests..... 274, 430, 454  
 Eurya ferox..... 312  
 Evergreens, effect of winter on..... 115  
 Exhibitions, 4, 60, 96, 113, 156, 215, 228, 262, 264, 278, 288, 300, 336, 372, 383, 395, 431, 455, 456, 497, 478, 479, 484, 495, 501, 504  
 Experiment stations, work for..... 289  
 horticulture in..... 181  
 Eysenhardtia spinosa..... 524  
 Fagus sylvatica..... 468  
 Farmers and forestry..... 229, 310  
 Felling trees..... 325, 397, 433  
 Fendlera rupicola..... 236  
 Fertilized flowers, protection for artificially\*..... 339  
 Ferns, cultivation of..... 317, 330, 340, 352, 394, 425  
 for basket culture..... 307  
 for cutting..... 522  
 for the window garden..... 474  
 new varieties..... 4, 9  
 notes on..... 9, 404  
 Ficus aurea\*..... 128, 214  
 elastica..... 214, 223  
 Ti-Koua..... 504  
 Vogeli..... 526  
 Fir, the Balsam..... 58  
 the Douglas..... 441, 500, 501  
 the Silver..... 120  
 the Spanish..... 494  
 Fishkill, Washington oak at\*..... 511  
 Flora of the Florida Keys..... 279  
 Floral novelties..... 270, 283  
 Floriculture in the United States..... 2  
 Florida, central, palms in..... 231  
 fruit growing in..... 77  
 horticulture in..... 39  
 oranges..... 519  
 Florida Keys, flora of..... 279  
 lime-tree in..... 422  
 Florists, Society of American, 301, 313, 321  
 and nurserymen, responsibil- ties of..... 337, 430  
 Florists' arrangements, taste in..... 409  
 Flourensia cornua..... 524  
 Flowers and fruit pictures at the Academy of Design..... 107  
 Flower beds, formal..... 169  
 border, a well-arranged\*..... 136  
 boxes, balcony..... 158  
 garden, the..... 224, 390, 402  
 gardens, English..... 399  
 mission, the New York..... 220  
 show at Philadelphia..... 96  
 at Boston..... 156  
 at Orange, New Jersey..... 456  
 Flowers, annuals for a succession of, 186  
 autumn..... 499  
 dyeing..... 86  
 Easter, in New York..... 14  
 in Japan\*..... 338, 350  
 in winter..... 98  
 protection for artificially fer- tilized\*..... 339  
 sermon of the..... 205  
 Foliage with cut flowers..... 69  
 Fontainebleau, forest of..... 95  
 Foreign plants and American scenery..... 266, 418  
 Forest lands, leasing of..... 123, 146  
 law in Russia..... 357, 492  
 for Italy, a new..... 417  
 laws..... 26, 357, 417  
 management, European..... 434  
 of Fontainebleau..... 95  
 planting in New England..... 323  
 in Virginia..... 500  
 preservation in Canada..... 219  
 and concerning..... 73  
 school at fancy..... 90  
 tree plantation of the Univer- sity of Illinois..... 466  
 tree planting in the prairies..... 202  
 trees for California..... 190  
 trees of the Far North-west..... 58  
 vegetation of northern Mexi- co, 70, 105, 117, 141, 226, 249, 429, 441, 524  
 Forestiera phillyreoides..... 524  
 Forestry, an American school of..... 86  
 Association, Pennsylvania..... 150  
 and farmers..... 229, 310

Forestry commissions..... 385  
 Congress at Atlanta..... 515  
 European state..... 345  
 California..... 361, 369, 380, 392  
 station at Dodge City..... 158  
 Forests, Adirondack, in danger..... 49, 73, 87  
 and civilization..... 505  
 and rainfall..... 489  
 care of..... 122  
 future of American..... 25  
 hardwood, of the South..... 34  
 in Pennsylvania..... 525  
 of Europe..... 430  
 of Europe as seen by an  
 American lumberman..... 274  
 of New Jersey..... 59  
 of the United States..... 297  
 of the White Mountains..... 2, 70, 493  
 of Tunis..... 71  
 of Vancouver's Island..... 46  
 on the national domain..... 97  
 Forget-me-nots..... 176  
 Forsythia..... 151  
 Forsythia alnifolia..... 29  
 Fouquieria splendens..... 50  
 France, American fruits in..... 482  
 Fraxinella..... 58  
 Fraxinus Americana..... 466  
 cuspidata..... 142  
 pistaciifolia..... 106  
 viridis..... 466  
 Freesia..... 68  
 Fringe tree..... 291  
 Fritillaria imperialis..... 163  
 meleagris..... 163, 258  
 Moggeridgei..... 258  
 pallidiflora..... 163  
 pudica..... 153  
 Pyrenaica..... 258  
 Fruit and flower pictures..... 107  
 and vegetables under glass..... 518  
 Fruit garden, the..... 257, 292  
 favorites..... 104  
 Fruit growing in Florida..... 77  
 in the West Indies..... 421  
 irrigation for..... 492  
 trees, hardy..... 205, 251, 274  
 on highways..... 528  
 Fruits, domestication of wild..... 105  
 American in France..... 482  
 for market and home use..... 91, 127  
 for cold climates..... 498  
 Improvement of North  
 American..... 514  
 thinning of..... 197  
 Fuchsia, centennial of the..... 423  
 Fungus diseases of insects..... 159

## G

Gaillardia..... 473  
 Galax aphylla..... 507  
 Gardenia, California..... 398  
 a French..... 289  
 a tropical..... 222  
 the Boston Public..... 345  
 in Shanghai, a..... 160  
 notes from an amateur..... 450  
 of chrysanthemums, a..... 522  
 plants, Latinized names of..... 490  
 Gardenia Fortunei..... 485  
 Gardener's art and Alexander Pope..... 207  
 Gardeners' Monthly, discontinu-  
 ance of..... 4  
 Gardening, future of American..... 13  
 Gardens of the Alhambra..... 255  
 Garrya Wrightii..... 524  
 Gaultheria..... 57, 143  
 Genista tinctoria..... 272, 442  
 Gentiana Saponaria..... 494  
 Gentians..... 307, 362  
 Geraniums, notes on..... 404  
 Germantown, exhibition at..... 456  
 Gethsemane, Garden of, olive tree in..... 284  
 Geum coccineum plenum..... 150  
 Gillenia trifoliata..... 225  
 Ginger, wild..... 177  
 Ginkgo biloba..... 102, 173, 174, 227  
 Gladioli, notes on, 139, 336, 348, 363, 375  
 444, 450, 474  
 Gladiolus, Oberpräsident von Sey-  
 deretz..... 108  
 winter..... 496  
 Gleichenias..... 379, 523  
 Gloxinia gesnerioides..... 341  
 Golden club..... 266  
 rod..... 435  
 Gooseberries..... 514  
 Gordonia pubescens..... 429  
 Grammatophyllum speciosum..... 468  
 Grape, the wild..... 524  
 Grape-vines, American, in Europe..... 111  
 how to prune..... 461  
 Grapes for home use..... 34, 56  
 under glass..... 21  
 Gray, Asa..... 1  
 bibliography of..... 482  
 Hooker's opinion of..... 26  
 Greenbrier..... 249, 465, 519  
 Green-house in summer, the..... 175  
 stages..... 339  
 climbers for cut flowers..... 487  
 Grevillea Theophrastiana..... 41  
 Grevillea parriflora..... 297  
 Groundsel tree..... 495  
 Guinea-ban flower, the..... 163, 258  
 Gymnocladia Pearcei robusta..... 303  
 Schizophylla..... 404

## H

Habenaria blephariglotis..... 290  
 ciliaris..... 290, 324  
 cristata..... 290  
 Hackberry, the..... 106  
 Haemanthus Katharinæ..... 328  
 Hakea laurina..... 347  
 Halesia tetraptera..... 220  
 Hamamelis mollis..... 120  
 Haplocharis Leichthol..... 523  
 Hardwood forests of the south, the..... 34  
 Harpalium rigidum..... 425  
 Hawkweed..... 252  
 Hawthorn..... 201  
 Hay, salt..... 155  
 Hazel, Constantinople..... 101  
 Heating of conservatories..... 407  
 Hedges, notes on..... 203  
 Helianthus angustifolius..... 362  
 Maximilianii..... 440  
 Heliconia Chocóniana..... 161  
 Heliborus niger..... 473  
 Heloniopsis Japonica..... 60  
 Hemlocks..... 58, 65  
 Hemp-weed..... 362  
 Hepatica, the..... 45, 107  
 Herbaceous plants in frames..... 427  
 in parks, etc..... 361  
 Herbs, fragrant, for edging..... 176  
 for seasoning..... 268  
 Heterosporum ornithogalli..... 264  
 Hibiscus sanguinea..... 115, 152, 291, 371  
 Hibiscus denata..... 496  
 Hibiscus lasiocarpus..... 425  
 Hicriacus..... 399  
 Hickory..... 190, 500  
 Hickory, the banded..... 148  
 Hieracium aurantiacum..... 252, 336  
 Hippeastrum aulicum..... 520  
 Hippophae rhamnoides..... 496  
 Holly..... 182, 528  
 Holothrix Lindleyana..... 120  
 Honeysuckle..... 154, 165, 201, 237, 273, 544  
 Honmoku, house in..... 314  
 Horse chestnut in Scotland..... 528  
 Horticultural exhibitions (see Exhi-  
 bitions)  
 fashions..... 49  
 Horticulture and the experiment  
 stations..... 181  
 Chinese, in N. Y..... 423  
 handbook of, wanted..... 65  
 in Florida, wanted..... 39  
 Howea Behmreana..... 407  
 Huckleberries, cultivation of..... 183  
 Hudsonia..... 212, 237, 295  
 Huernia aspera..... 295  
 Hyacinths for forcing..... 332  
 Hyacinthus corymbosus..... 108  
 Hybridization, device for aiding..... 339  
 Hydrangea arborescens..... 296  
 hortensis..... 226, 336  
 paniculata..... 296, 408, 419  
 quercifolia..... 296  
 radiata..... 296  
 rosea..... 68  
 Hymenocallis humilis..... 114  
 Palmeri..... 138  
 Hymenoclea monogyra..... 524  
 Hypericum calycinum..... 333  
 patulum..... 333

## I

Ilex glabra..... 182, 261  
 levigata..... 261, 453  
 macrocarpa..... 527  
 opaca..... 182  
 verticillata..... 182, 261, 453  
 Illinois, forest tree plantation of the  
 University of..... 465  
 Impatiens Hookeri..... 329  
 Incarvillea Ulge..... 450  
 Indigo..... 527  
 Injurious shade-trees..... 469  
 Ink-berry..... 182, 261  
 Insects, cone-eating..... 100  
 fungus diseases of..... 159  
 Ipacacuanha..... 527  
 Ipomea Hardingei..... 329  
 Briggsii..... 485  
 Horsfalliae..... 485  
 ternata..... 485  
 paniculata..... 329  
 Iris Alberti..... 407  
 bracteata..... 43  
 cristata..... 188  
 Germanica..... 150  
 Kaempferi..... 259, 264  
 Korolkowi..... 127, 209, 348, 401  
 Krelargii..... 127  
 levigata..... 259, 402, 431  
 pabularia..... 326  
 pumila..... 188  
 reticulata..... 127  
 stylosa..... 148  
 tenuis..... 6  
 Virginea..... 182, 495  
 Irises, notes on..... 18  
 Iron-wood..... 102  
 Irrigation in the West..... 253, 277, 494  
 for fruit..... 492  
 Italy, new forest law of..... 417  
 Itea Virginica..... 261  
 Ivy, poison..... 143  
 Ixodion Tartaricum..... 200  
 Ixora Duffii..... 400

## J

Jack-pine plains..... 398  
 Jamesia Americana..... 237  
 Japan, flowers in..... 338, 350  
 house at Honmoku in..... 314  
 pictures of..... 756  
 temples in..... 88, 434  
 Japanese Iris..... 259  
 Jasmine, white Bornean..... 41  
 Jeffersonia diphylla..... 165  
 Jubaea spectabilis..... 232  
 Judas tree..... 220  
 Juglans Jamaicensis..... 503  
 Manchurica..... 396, 443  
 rupestris..... 106  
 Juniper, dwarf..... 107  
 Juniperus occidentalis..... 141, 441  
 pachyphloea..... 441  
 tetragona..... 441  
 Virginiana..... 59, 65, 470

## K

Kaempferia secunda..... 275  
 Kalmia latifolia..... 442  
 Kansas forest trees identified..... 12  
 Kennedy Marryatæ..... 16, 495  
 Kew Arboretum, the..... 46, 53, 101, 136  
 Kingston, R. L., street in..... 208  
 Kitchen garden, the..... 91, 103, 342  
 Kniphophia..... 380, 404  
 Kosreuteria bipinnata..... 376  
 paniculata..... 376

## L

Labels..... 146, 516  
 Lacharme, proposed monument..... 75  
 Lælia albidia..... 16  
 anceps..... 4, 316, 511, 520  
 autumnalis..... 511  
 Batemanniæna..... 340  
 callistoglossa..... 284, 339  
 crispa..... 366  
 elegans..... 414  
 Eyermannii..... 312, 315  
 flammæa..... 212  
 Gouldiana..... 4  
 monophylla..... 388  
 Patni..... 475  
 Perrini..... 495  
 purpurea..... 479  
 Victor..... 495  
 Lake-flower..... 243, 295  
 Landolph Howardensis..... 526  
 Landscape-gardening, 2, 14, 27, 38, 51, 58,  
 63, 75, 87, 94, 112, 130, 142, 335, 480, 481  
 bibliography of..... 94  
 Lantana..... 198  
 Langeria alba..... 456  
 Larch, European, in Massachusetts..... 11  
 European..... 500  
 the common..... 59  
 Larch forest with undergrowth..... 94  
 Lax leptolepis..... 454  
 Lænapur..... 283  
 Larrea Mexicana..... 524  
 Latrea montana..... 315  
 Latania floribunda..... 324  
 Latinized names of garden plants..... 490  
 Laurel..... 182, 189  
 mountain..... 442  
 Lawn, how to make a..... 3  
 notes on..... 22, 299, 475  
 suggestions for making a..... 357  
 Tennis..... 285  
 Lead-plant..... 154  
 Leather-leaf..... 52  
 Leather, for England, bridge at..... 129  
 Leatherwood..... 99  
 Leaves of last year..... 495  
 Lechea minor..... 236  
 Ledum latifolium..... 236, 519  
 Leiodaphnium buxifolium..... 236, 519  
 Leland Stanford, Jr., University,  
 plan of..... 26, 507  
 Leptosyne maritima..... 21  
 Lespedeza bicolor..... 285  
 Leucocium æstivum..... 263  
 Leucophyllum minus..... 501  
 Leucothoe racemosa..... 237, 454  
 Ligustrum amurense..... 260  
 Californicum..... 260  
 Iboia..... 260  
 ovalifolium..... 260  
 vulgare..... 260  
 Lilacs, notes on..... 21  
 Lilies, cultivation of..... 55, 81  
 notes on..... 93, 103  
 Lilium auratum..... 103, 363, 388  
 Brownii..... 103  
 candidum..... 103, 115  
 elegans..... 103  
 excelsum..... 103  
 Grayi..... 79, 56, 256  
 Hansoni..... 291  
 Henryi..... 528  
 longiflorum..... 103, 115  
 Nepalense..... 387, 443  
 Parkmani..... 363  
 Parryi..... 39, 141  
 punctatum..... 103  
 purpuratum..... 103  
 speciosum..... 103  
 Sovitzianum..... 291  
 tenuifolium..... 103  
 tigrinum flore pleno..... 103  
 Wallichianum..... 425  
 Lily, Guernsey..... 4  
 Japan..... 103

Lime tree, Crimean..... 17  
 in Florida..... 427  
 Limnanthemum lacunosum..... 243, 255  
 nymphæoides..... 295  
 Linden, the silver..... 231, 312  
 American and European..... 254  
 Lindera Benzoin..... 154  
 fragrans..... 527  
 Lippia lcyoides..... 524  
 Wrightii..... 524  
 Liquidambar wood..... 110  
 Lisbon, park in..... 36  
 Lissoclitus giganteus..... 208, 263  
 Live Oak..... 136, 476  
 Livistonia horrida..... 479  
 Locust, the common..... 83, 500, 514  
 the Honey..... 254  
 Lomaria Spicant..... 341  
 Lonchocarpus dyaneensis..... 527  
 Lonicera Albertyi..... 226  
 albiflora..... 524  
 ciliata..... 165  
 coccinea..... 165  
 fragrantissima..... 154  
 Japonica..... 243  
 Maximowiczii..... 226  
 oblongifolia..... 237  
 Periclymenum..... 273  
 Ruprechtiana..... 201  
 Standishi..... 154  
 Luffa acutangula..... 483  
 Lychnis..... 294  
 Lycium Chinesse..... 286, 453  
 pallidum..... 340  
 Lycopodium..... 519  
 complanatum..... 505  
 dendroideum..... 505  
 Lygodium palmatum..... 354  
 scandens..... 474

## M

Macaranga Porteana..... 168  
 Machaonia Pringlei..... 524  
 Mackya bella..... 176  
 Macrotonia Benthamii..... 299  
 Magnolia conspicua..... 232  
 cordata..... 507  
 glauca..... 362  
 grandiflora..... 516  
 hypoleuca..... 304, 312  
 Norbertiana..... 516  
 Soulangiana..... 516  
 stellata..... 151, 232, 516  
 Thompsoniana..... 268  
 Magnolias, notes on..... 33  
 propagation of..... 45  
 Mahernia verticillata..... 70  
 Maiden-hair fern..... 200, 341  
 Malacothrix obtusa..... 375  
 Manettia bicolor..... 473  
 Mangrove, notes on..... 100  
 Manure..... 416  
 Maple, the Ash-leaved..... 254  
 the Japanese..... 312, 453  
 the Norway..... 254  
 the Sugar..... 174, 254  
 the Sycamore..... 262, 348  
 the White..... 254  
 Marigolds..... 473  
 Masdevallia Chestertonii..... 48  
 gibberosa..... 120  
 Harryana..... 468  
 ignea..... 16  
 macrura..... 520  
 Mooreana..... 520  
 pulvinaris..... 520  
 tovarensis..... 16  
 Massachusetts Horticultural So-  
 ciety..... 60, 228, 300, 336, 372  
 European Larch in..... 11  
 Maurandia Barclayana..... 473  
 Maxillaria fuscata..... 503  
 Meadow beauty..... 519  
 Meadows, the, in Central Park, New  
 York..... 124  
 Meconopsis Wallichii..... 291  
 Merendera Caucasica..... 138  
 Mesembryanthemum Brownii..... 60  
 Mesosperidium vulcanicum..... 414  
 Mexican orange flower..... 219  
 Mexico, notes from a naturalist in..... 386  
 forest vegetation of northern,  
 70, 105, 117, 141, 226, 238, 429, 441, 524  
 Microlepis hirta cristata..... 523  
 Milnia scandens..... 362  
 Mildew on roses..... 429  
 Milla flora..... 20, 56, 329  
 Miltonia Phalaenopsis..... 236  
 Mimosa biocarpa..... 524  
 Pringlei..... 524  
 proflua..... 524  
 Minusops Silveri..... 527  
 Minneapolis, Minn., park in..... 374  
 Minnehaha, Fall of..... 12  
 Minnesota, climate of..... 203  
 Mist-flower..... 362  
 Mite, the red, on verbenas..... 20  
 on trees..... 459  
 Mitella diphylla..... 165  
 Mitre-wort..... 165  
 Mobile, Spring and Winter plants  
 of..... 16, 88  
 Momordica Charantia..... 483  
 Monolammus confusor..... 172  
 Montbretias..... 299, 450  
 Morning Glory, new variety of..... 30  
 Mortonia scabrella..... 524  
 Morus microphylla..... 524

- Mulching shrubby beds..... 33  
 Musa proscidea..... 527  
 Mushrooms, cultivation of..... 318, 497  
 Mustard, green..... 484  
 Myiopsis dissitiflora splendens..... 115, 235  
 Myrica cerifera..... 280, 494  
 Myrica, the Sand..... 182  
 Myrica, the Wax..... 280, 494
- N**  
 Names of plants..... 323, 490  
 Nancy, forest school at..... 60  
 Nantucket, a glimpse of..... 447  
 Narcissus monophyllus..... 510  
 — Broussoneti..... 395  
 — polyanthus..... 44, 141  
 — Pseudo-Narcissus..... 177, 371  
 Natural beauty and the landscape  
 gardener..... 481  
 Nepenthes Dicksoniana..... 436  
 Nephrodium rufescens tripartita-  
 fida..... 404  
 — Rodigasianum..... 404  
 — Tuerckheimii..... 371  
 Nephrolepis davallioides furcata..... 523  
 — exaltata..... 523  
 Nerine Fothergillii..... 411  
 — Mansellii..... 411  
 Nerium Oleander..... 399  
 Neviusia Alabamensis..... 212, 219  
 New England, forest planting in..... 393  
 New Jersey, forests of..... 50  
 Newport..... 470, 482  
 New York City, a botanic garden for..... 517  
 Nikko, Temple in..... 434  
 Nine-Bark..... 225  
 Nogal tree..... 503  
 Nomenclature, botanical..... 323, 490  
 North American fruits, improvement  
 of..... 514  
 North-west, forest trees of..... 58  
 Novelties at Baden-Baden..... 233  
 — Floral..... 270, 283  
 Nurserymen, Association of Ameri-  
 can..... 193  
 — and florists, responsibilities  
 of..... 337, 430  
 Nursery stock, disease of..... 194  
 Nymphaea..... 241  
 — alba..... 241  
 — ampla..... 242  
 — castalia..... 186  
 — dentata..... 242  
 — Devoniensis..... 242  
 — Kewensis..... 120  
 — Liebergii..... 186  
 — Lotus..... 242, 495  
 — Luteum..... 242  
 — odorata..... 241, 263  
 — pygmaea..... 186, 241  
 — rubra..... 242  
 — scutifolia..... 242  
 — speciosa..... 242  
 — tuberosa..... 241, 263, 368  
 — Zanzibarensis..... 242  
 Nyssa sylvatica..... 444
- O**  
 Oak, the Chestnut..... 511  
 — the Pin..... 136, 254  
 — the Red..... 136, 254  
 — the Scarlet..... 136, 254  
 — the Shingle..... 136, 254  
 — the Washington..... 511  
 — the White..... 500  
 — the Willow..... 136, 254  
 Oaks in the Kew Arboretum..... 136  
 — European..... 101  
 — for California..... 190  
 — in Kent..... 528  
 Odontoglossum crispum..... 108, 159  
 — grande..... 404  
 — Halli..... 244  
 — Harryanum..... 163, 316, 344, 514, 520  
 — Inseayi..... 108  
 — Karwinski..... 376  
 — nebulosum..... 244, 248  
 — Rossi..... 159, 479, 514  
 — Rozeii..... 379  
 — Schroederianum..... 52  
 — Uro Skinneri..... 248  
 — Walisii..... 248  
 Oil of Sassafras..... 458  
 Oil-tree of China and Japan..... 135  
 Olea Europaea..... 284  
 Olearia Haastii..... 363  
 Olive tree..... 284  
 Oncidium Jancieriense..... 316  
 — Jonesianum..... 60  
 — Lanceanum..... 316  
 — Leitzei..... 395  
 — Mantieri..... 472  
 — macranthum..... 308  
 — ornithorhynchum..... 387  
 — Papilio majus..... 204  
 — pulvinatum..... 224  
 Onoclea sensibilis..... 353  
 — struthiopteris..... 353  
 Onosma pyramidalis..... 50  
 — stellatum..... 176  
 Onteora Club, the..... 266  
 Onychium japonicum..... 523  
 Ophioglossum vulgatum..... 354  
 Opuntia Rafinesquii..... 485  
 Orange-flower, Mexican..... 219, 348  
 — trees..... 231  
 Oranges, Florida..... 519  
 Orchard, arsenical poisons in..... 9  
 Orchid houses..... 319  
 Orchids in New York..... 475  
 — fringed..... 290  
 Oreodoxa oleracea..... 503  
 — regia..... 232  
 Ornithogalum Arabicum..... 41  
 — nutans..... 189  
 — Orobis vernus..... 153  
 — Orontium aquaticum..... 36, 310  
 — Osmunda cinnamomea..... 243, 354  
 — Claytoniana..... 354  
 — regalis..... 354  
 Ostrowskia magnifica..... 393, 348, 406  
 Ostryopsis Davidiana..... 165  
 Oxalis Acetosella..... 303  
 — violacea..... 494  
 Oxera pulchella..... 16, 36  
 Oxybaphus Californica..... 36  
 Oxydendrum arboreum..... 332, 440
- P**  
 Paeonia albiflora..... 224, 270, 271  
 — anomala..... 270  
 — arefina..... 270  
 — Broteri..... 271  
 — Brownii..... 271  
 — Byzantina..... 270  
 — decora..... 270  
 — Emodi..... 270  
 — humilis..... 271  
 — mollis..... 270  
 — officinalis..... 224, 270  
 — peregrina..... 270  
 — Russii..... 270  
 — tenuifolia..... 169, 270  
 — thermata..... 270  
 — Wilmanniana..... 271  
 Palicourea Nicotianefolia..... 275  
 Palm, the Masacre..... 503  
 — the Tallot..... 223  
 Palms, cultivation of..... 322, 373  
 — for house decoration..... 29  
 — in Central Florida..... 231  
 Panax sessiliflorum..... 356  
 Panic, Dr., death of..... 135  
 Pancreas, Dr., death of..... 452, 475  
 Pansies..... 115  
 Papaver bracteatum..... 225  
 — nudicaule..... 210  
 — orientale..... 340  
 — Rhoeas..... 210  
 Papaw, the wild..... 514  
 Paper pulp from pine and spruce..... 291  
 — red cedar..... 470  
 Paphia cristata..... 243  
 Paris, squares of..... 27  
 — horticultural exhibition..... 27  
 Park, Central..... 30, 37, 124, 144, 27  
 — in Atlanta..... 36  
 — in Lisbon..... 36  
 — in Minneapolis..... 374  
 — in Wilmington, Del..... 12  
 — City Hall, attack on..... 134  
 — commission at Rochester..... 482  
 — novel project for a public..... 457  
 — Prospect, Brooklyn..... 27, 262, 335  
 — Yellowstone, enlargement of..... 75  
 — forests of..... 129  
 Park-making, Anglomonia in..... 64  
 Parks and squares of U. S. cities..... 412  
 — for Philadelphia..... 144  
 — herbaceous plants in..... 361  
 — use and abuse of..... 121  
 Parnassia Fabae..... 527  
 Parrotia Persici..... 464  
 Parsley..... 484  
 Parthenium incanum..... 524  
 Passiflora Kewensis..... 292  
 — Miersii..... 407  
 — cecumosa..... 488  
 — oddiana..... 488  
 — violacea..... 228  
 Patagonia Imperialis..... 406, 479  
 Peat, the sugar..... 484  
 Pear, Belle Picarde..... 168  
 — Pierre Tourasse..... 108  
 — balsam..... 483  
 Peach yellows, the..... 368  
 — the Le Conte..... 392  
 Peach blight..... 466  
 Peat muck..... 105  
 Pecan nuts..... 528  
 Pellaea atropurpurea..... 341  
 — gracilis..... 341  
 Peltandra Virginica..... 243  
 Pennsylvania Forestry Association, 154, 491  
 — forests..... 525  
 — Horticultural Society, exhibi-  
 tion of..... 395  
 Pentstemon sicula..... 407  
 Pentstemon barbatus..... 210  
 — rotundifolius..... 407, 472, 496  
 Pepper-root, the..... 188  
 Pepper-tree, the..... 118  
 Perennials, hardy..... 54, 176, 462  
 — Periwinkle, the..... 107  
 — Persimmon, the..... 491, 514  
 Petalostemon decumbens..... 705  
 Phajus callosus..... 18  
 — tuberosus..... 31, 89, 485  
 — Wallichii..... 401  
 Phalaenopsis, cultivation of..... 403  
 Phalaenopsis Esmeralda..... 367  
 Phalaenopsis F. L. Ames..... 4, 36  
 — gloriosa..... 244  
 — Harriettis..... 68  
 — intermedia Portel..... 464  
 — John Seden..... 108, 125  
 — Kimballiana..... 255  
 — Lowi..... 414, 485  
 — Marice..... 328, 366  
 — Miltonia..... 236  
 — Parishii..... 236  
 — Sanderiana..... 68  
 — Schilleriana..... 204, 479  
 — speciosa Imperatrice..... 236, 255  
 — Sumatrana..... 235  
 Phegopteris calcarata..... 342  
 — dryopteris..... 342  
 — hexagonoptera..... 342  
 — polypodioides..... 342  
 Philadelphia flower show..... 96  
 — parks for..... 144  
 Philadelphus Coulteri..... 232  
 — coronarius..... 249  
 — var. Satsuma..... 241  
 — microphyllus..... 248  
 — Schrenkii..... 249  
 — speciosus..... 249  
 Phlox adsurgens..... 66  
 — amena..... 150  
 — divaricata..... 8  
 — Drummondii..... 288  
 — nana..... 113  
 — reptans..... 164  
 — Stellaria..... 259  
 — subulata..... 259  
 Phoenix..... 231  
 — Phoenix Canariensis..... 168, 231  
 — rupicola..... 231  
 — sylvestris..... 231  
 Phormium Hookeri..... 48  
 — Philota villosa..... 67  
 Physocarpus Amurensis..... 225  
 — Plazas..... 433, 446  
 Picea Ajanensis..... 140  
 Pictures, flower and fruit, at Acad-  
 emy of Design..... 107  
 Pine, the Black..... 59, 129  
 — the Chin..... 101  
 — fibre matting..... 469  
 — forest, a New Jersey..... 166  
 — the Norway..... 106  
 — the Scotch..... 502  
 Pines, among the, in April..... 124  
 — in May..... 182  
 — in June..... 243  
 — in July..... 290  
 — in August..... 362  
 — in October..... 435  
 — in November..... 494  
 — Christmas in the..... 518  
 Pink-root, Demerara..... 527  
 Pinus albicaulis..... 130  
 — Arizona..... 430  
 — Banksiana..... 106, 398  
 — Canariensis..... 276  
 — cembroides..... 430  
 — Chihuahuana..... 238, 479, 430  
 — contorta..... 59  
 — Cubensis..... 476  
 — flexilis..... 1, 10, 65, 103  
 — Halepensis..... 263  
 — inops..... 65  
 — insignis..... 65  
 — Laricina..... 102  
 — macrophylla..... 238, 429  
 — maritima..... 504  
 — Murrayana..... 59, 129  
 — occidentalis..... 593  
 — palustris..... 261, 469  
 — pinea..... 503  
 — ponderosa..... 130  
 — the weeping..... 392  
 — Pyrenaica..... 407  
 — resinosa..... 65  
 — rigida..... 59, 65, 154  
 — Sabiniana..... 348  
 — strobiliformis..... 430  
 — Strobus..... 238, 368  
 — Sylvestris..... 502  
 — Torreyana..... 144  
 Pinweed..... 205  
 Pitcairnia Jaliscana..... 23  
 — Palmeri..... 209  
 — Tuerckheimii..... 503  
 Pitcher plant..... 405  
 Pithecoctenium Buccinatorium..... 479  
 Pithecolobium Saman..... 213  
 Pixie, The..... 507  
 Plagianthus Lyali..... 395  
 Plains, rainfall on the..... 62, 169, 411  
 Plan for a small homestead..... 111  
 Planchon, Professor J. E., death of..... 99  
 Plans for small places..... 110  
 Plantation for winter, a..... 98  
 Planting for autumn effect..... 410  
 — notes..... 451  
 — the dunes..... 357  
 Plants, bedding, for spring..... 70  
 — dispersion of..... 213  
 — and cut flowers..... 110, 258, 278  
 — hardy, for forcing..... 150  
 — staking of..... 188  
 — useful, of Southern California..... 114  
 — why we do not buy growing..... 121  
 Platycaria strobilacea..... 36  
 Platycodon grandiflorum..... 264  
 Plum and the curculio, the..... 187  
 Plum, the Beach..... 200, 514  
 — the Sierra..... 514  
 Plums for the west..... 343  
 — our native..... 498  
 — Satsuma..... 471  
 Plumus fragrans..... 491  
 — Poa tenuifolia..... 375  
 Poisonous plants..... 118, 143  
 Poise, the..... 161  
 Polioanthus incana..... 347  
 Polyanthuses..... 161  
 Polygala lutea..... 362, 494  
 Polygonatum multiflorum..... 200  
 Polypodium Californicum..... 341  
 — vulgare..... 341  
 Pomology, needs of American..... 37  
 Pope, Alexander, and the garden-  
 er's art..... 207  
 Poplar, the Lombardy..... 174, 302  
 — white..... 254  
 Poppies, notes on..... 210  
 Populus tremontii, var. Wislizeni..... 105  
 — resinosa..... 139  
 — tremuloides..... 58  
 — Passage on seeds, plants, etc..... 254  
 Potato disease..... 495  
 Potentilla fruticosa..... 285  
 — tridentata..... 285  
 Prairies, forest tree planting on..... 202  
 — climate of the..... 159  
 Pretty plants, an appeal for..... 524  
 Primula capitata..... 519  
 — cortusoides..... 141  
 — double Chinese..... 41, 68  
 — Faberi..... 527  
 — geraniifolia..... 60  
 — obconica..... 210  
 — officinalis..... 210  
 — rosea..... 141  
 — Rusbyi..... 320  
 — Sinensis..... 204  
 — vulgaris..... 153, 519  
 Prince's pine..... 519  
 Privet..... 260  
 Propagation of Conifers..... 47, 436  
 Prosopis juliflora..... 117  
 Prospect Park, Brooklyn..... 217, 262, 335  
 Prune, the German..... 228  
 Pruning shrubs..... 80, 498  
 — Grape vines..... 461  
 — trees..... 488  
 Prunus Americana..... 178  
 — avium..... 201  
 — capuli..... 108  
 — cerasifera..... 178  
 — Cerasus..... 201, 320  
 — Chamaecerasus..... 201  
 — Davidiana..... 153  
 — divaricata..... 178  
 — domestica..... 178  
 — humilis..... 200  
 — ilicifolia..... 474  
 — insititia..... 178  
 — Jacquemontii..... 48, 200  
 — Japonica..... 200  
 — Maackii..... 295  
 — Maritima..... 200, 514  
 — Miqueliana..... 196  
 — Padus..... 295  
 — pendula..... 196, 263  
 — Pissardi..... 170, 178  
 — Pseudo-cerasus..... 178, 453  
 — pumila..... 200  
 — ranunculiflora..... 201  
 — serotina..... 108  
 — subcordata..... 514  
 — tomentosa..... 154  
 Pseudopanax Sargentii..... 279, 352, 443  
 Pseudotsuga Douglasii..... 441, 500, 501  
 Psychotria jasmiflora..... 140  
 Pteris aquilina..... 341  
 — argyrea..... 523  
 — Claphamensis..... 4  
 — Cretica..... 523  
 — serrulata..... 523  
 — tremula..... 427, 523  
 Pterocarya fraxinifolia..... 443  
 Pyrus arbutifolia..... 212  
 — Aria..... 212  
 — coronaria..... 212, 219  
 — fennica..... 212  
 — floribunda..... 212  
 — Maulei..... 232  
 — prunifolia..... 453  
 — sambucifolia..... 236  
 — Sinensis..... 453  
 — spectabilis..... 232, 272
- Q**  
 Quercus acuta..... 137  
 — Burseri..... 137  
 — ceris..... 102, 137  
 — cocinea..... 136  
 — conferta..... 136  
 — Daimi..... 137  
 — dentata..... 137, 454  
 — Emoryi..... 142, 238  
 — fulva..... 441  
 — Georgiana..... 465  
 — glandulifera..... 137  
 — grisea..... 142, 238, 441  
 — hypoleuca..... 136  
 — Ilex..... 136  
 — imbricaria..... 136  
 — lobata..... 275, 300  
 — oblongifolia..... 142  
 — palustris..... 136  
 — Pannonica..... 136  
 — pedunculata..... 102, 266, 137

- Quercus Phellos*..... 136  
*pinus*..... 511  
*porcina*..... 190  
*raculata*..... 137, 441  
*Rubus*..... 136  
*rubra*..... 136  
*sessiliflora*..... 136  
*tinctoria*..... 136, 190  
*undulata*..... 142  
*virens*\*..... 136, 476  
*Quesnelia Wittmanniana*..... 407  
*Quinces, how to grow*..... 247  
*on Apple stocks*..... 368  
*Quisqualis Indica*..... 309
- R**  
*Rainfall on the Great Plains*..... 62, 169, 411  
*do forests influence*..... 489  
*Randia Pringlei*..... 524  
*Ranunculus, the*..... 368  
*Raspberry canes, removing*..... 405  
*Renanthera Storoi*..... 316  
*Resin*..... 217  
*Rhizomorpha, the*..... 57, 166  
*Rhamnus alnifolia*..... 241  
*Californicus*..... 524  
*Frangula*..... 286  
*Rhaphis flabelliformis*..... 231  
*Rhexia Virginica*..... 519  
*Rhodochiton volubile*..... 329  
*Rhododendron arboreum*..... 400  
*argenteum*..... 228  
*brachycarpum*\*..... 292  
*calendulaceum*..... 237  
*Catawbiense*..... 237  
*Colletianum*..... 407  
*Dauricum sempervirens*..... 141  
*ferrugineum*..... 237  
*multicolor Curtisii*..... 208  
*Primrose*..... 17  
*punctatum*..... 237  
*Rhodora*..... 189  
*Rheysmanni*..... 208  
*Vaseyi*\*..... 119, 376, 440, 466  
*viscosum*..... 273  
*Rhododendrons, hardy*..... 25, 82, 116, 142  
*Malayan*..... 495  
*notes on*..... 472  
*seedling*..... 81  
*Rhus aromatica*..... 154  
*copallina*..... 309, 362  
*cotinoides*..... 114  
*glabra*..... 309  
*microphylla*..... 524  
*semitata*..... 344  
*typhina*..... 309  
*venenata*..... 143, 309, 362  
*virens*..... 524  
*Ribes alpinum*..... 165, 239  
*aureum*..... 165, 178, 239  
*Cynosbati*..... 178  
*floridum*..... 190  
*Gordianum*..... 178  
*Lobbi*..... 514  
*malvacum*..... 165  
*Missouriensis*..... 416  
*multiflorum*..... 189  
*prostratum*..... 165  
*rotundifolium*..... 165  
*rubrum*..... 190  
*sanguineum*..... 165, 178  
*saxatile*..... 165  
*speciosum*..... 219  
*triflorum*..... 189  
*Uva-crispa*..... 189  
*Ripen the wood*..... 294  
*Roadside beauty*..... 147  
*Rochester park commission*..... 482  
*Rock-garden in spring, the*..... 127, 153, 163, 177, 188  
*notes from the*..... 199, 271  
*Rockets*..... 235  
*Rocky mountain bramble*..... 225  
*Romneya Coulteri*..... 297, 388, 414  
*Rondeletia grandiflora*..... 68  
*Rosa alba suaveolens*..... 504  
*Beggeriana*..... 333  
*canina*..... 268  
*Gallica*..... 504  
*gigantea*..... 321  
*grandiflora*..... 148  
*Kamtschatica*..... 492  
*laevigata*\*..... 234, 379  
*lucida*..... 452  
*minutifolia*\*..... 452  
*nitida*..... 261, 454  
*Nulkana*\*..... 449  
*repens*..... 348  
*rubiginosa*..... 268  
*rugosa*..... 264, 441, 452, 489, 492  
*setigera*..... 286  
*spinosissima*..... 454  
*Rose, American Beauty*..... 462  
*Bardon Job*..... 347  
*Comte Henri Rimon*..... 479  
*Comtesse de Reigneuse*..... 513  
*Gloire de Polanthia*..... 125  
*Hermosa*..... 516  
*La France*..... 513  
*Mme. Hottel*..... 523  
*Nipheto*..... 513  
*of Sharon*..... 107, 160  
*Papa Gontier*..... 271, 462  
*Perle des Jardins*..... 462  
*Princess Beatrice*..... 163  
*the Bride*..... 462  
*the Cherokee*\*..... 234, 370  
*Rose, the Japanese*..... 204, 441, 454  
*Vicomtesse de Wautier*..... 204  
*Rose beetle, whitewash for*..... 307  
*cuttings*..... 390  
*Roses, a list of*..... 161, 368  
*Christmas*..... 293  
*from the grower's standpoint*..... 321  
*how to prepare a bed for*..... 149  
*Lenten*..... 320  
*mildew on*..... 429  
*new varieties of*..... 8, 315, 429  
*notes on*..... 8, 342, 417, 439, 462, 513  
*out-door*..... 452, 489  
*soil for*..... 451  
*summer*..... 293  
*Tea*..... 108, 204, 479, 513, 523  
*Royal Botanic Society, exhibition of*..... 113  
*Ruapellia grata*..... 407  
*Rubber-plant*..... 214, 223, 526  
*Rubus*..... 105, 127  
*deliciosus*..... 219, 225  
*fruticosus*..... 273  
*hispidus*..... 494, 519  
*nutkanus*..... 225, 261  
*odoratus*..... 225, 261  
*strigosus*..... 360  
*trifidus*..... 273  
*Rudbeckia bicolor*..... 473  
*laciniata*..... 312  
*Rural improvement societies*..... 145  
*Russian forest laws*..... 357, 492
- S**  
*Sabal palmetto*..... 231  
*longipedunculata*..... 231  
*Mohrii*..... 231  
*Palmetto*..... 276, 514  
*serrulata*..... 286  
*Sabbatia chloroides*..... 324, 362  
*Saccolabium coeleste*..... 315  
*Heatit*..... 339  
*Sagittaria*..... 243  
*Salix balsamifera*..... 228, 249  
*candida*..... 249  
*chlorophylla*..... 154  
*irrorata*..... 106  
*nigra*..... 106  
*phylicoides*..... 371  
*taxifolia*..... 106  
*Salpiglossis sinuata*..... 312  
*Salvia coccinea*..... 270  
*Pitcher*..... 363  
*prunelloides*..... 270  
*scapiformis*..... 160  
*Sambucus Canadensis*..... 260  
*Mexicana*..... 106  
*racemosa*..... 250  
*Sand Myrtle*..... 236  
*ridge in California, a*..... 374  
*Sarcocollis Berkeleyi*..... 68  
*Hartmanni*..... 371  
*Sarrocenia Williamsi*..... 249  
*Sassafras, oil of*..... 58  
*Satin-flower*..... 41  
*Satsuma Plum*..... 471  
*Satyrium princeps*..... 120  
*Saxifrage, new varieties of*..... 89  
*Saxifraga, peltata*..... 177  
*Scenery, American, and foreign*..... 266, 418  
*Schizandra Chinensis*..... 213  
*Schizocodon uniflorus*..... 507  
*Schizaea pusilla*..... 243  
*Schizophragma hydrangeoides*..... 233  
*Schizostylis coccinea*..... 449, 496  
*Schomburgkia tibialis*..... 395  
*School grounds, improvement of*..... 133  
*of forests, an American*..... 86  
*Scilla Hispanica*..... 189  
*Scelopendrium vulgare*..... 315, 342  
*Scuticaria Heyseriana*..... 208  
*Steel*..... 208  
*Sea-buckhorn*..... 496  
*Seeds, dispersion of*..... 213  
*longevity of coniferous tree*..... 250  
*growing deciduous trees from*..... 23  
*Selaginella cuspidata crispata*..... 148  
*Pringlei*..... 185  
*Sempervivum, varieties of*..... 115  
*Senecio cruciata*..... 264  
*eleagnifolia*..... 256  
*Giesbreghtii*..... 496  
*salignus*..... 524  
*Sequoia*..... 119  
*Serpent Mound Park, the*..... 398  
*Service-berry*..... 201  
*Shad-bush*..... 182  
*Shade-trees, injuries to*..... 469  
*Shanghai, a garden in*..... 160  
*Shepherdia argentea*..... 320, 358  
*Short Hills Orchid and Chrysanthemum Show*..... 479  
*Shortia galacifolia*\*..... 506  
*uniflora*..... 507  
*Shrub propagation*..... 18  
*Shrubs, hardy*..... 50  
*hardy, for forcing*..... 6, 92, 113  
*Japanese, diseases of*..... 60, 77  
*pruning of*..... 80, 489  
*Silenes*..... 390  
*Simmondsia Californica*..... 414  
*Slopes and banks, treatment of*..... 326  
*Smilacina bifolia*..... 200  
*stellata*..... 150  
*Smilax glauca*..... 465  
*Pseudo-China*..... 249, 465  
*Smilax rotundifolia*..... 249, 465, 519  
*Walteri*..... 519  
*Snowberry jelly*..... 57, 143  
*Snow-drop tree*..... 220  
*Snowdrops*..... 499  
*Snowflake, Summer*..... 163  
*Snowstorm, effect of*..... 52  
*Soaps, vegetable*..... 153  
*Soapwort Gentian*..... 494  
*Sobralia leucoxantha*..... 328  
*Soils*..... 488  
*Solidago elliptica*..... 435  
*sempervirens*..... 435  
*Sonora hillside, a*\*..... 186  
*Sophora Japonica*..... 102, 344  
*Sorbus domestica*..... 514  
*Sour-wood*..... 332, 440  
*Spathoglottis aurea*..... 371  
*Kimballiana*..... 124, 224, 316  
*Vieillardii*..... 395  
*Sperinophilus fossor*..... 190  
*Sphaeralea Emoryi*..... 473  
*Spice-bush*..... 154  
*Spigelia chinensis*..... 527  
*odoratus*..... 484  
*Spinach, Chinese*..... 513  
*common*..... 513  
*Spindle-trees*..... 212, 453  
*Spiraea alpina*..... 225  
*cana*..... 225  
*Cantonensis*..... 225, 464  
*chemodrifolia*..... 190  
*corymbosa*..... 237  
*Douglasii*..... 227  
*grandiflora*..... 227  
*hypericifolia*..... 227  
*Japonica*..... 260, 310  
*Lindleyana*..... 260  
*media*..... 190  
*prunifolia*..... 178, 225, 453  
*pubescens*\*..... 339  
*salicifolia*..... 273  
*Saurauia*..... 225  
*sorbifolia*..... 260  
*Thunbergii*..... 178, 225, 453  
*Tobolskia*..... 286  
*tomentosa*..... 310  
*trilobata*\*..... 453  
*Spools, wood used for*..... 506  
*Sprekelia formosissima*..... 309  
*Spring beauty*..... 177, 211  
*Sprouts, Brussels*..... 513  
*Spruce, the black*..... 58  
*the Douglas*..... 500  
*the Norway*..... 64, 106, 143, 166, 191, 215, 227, 230, 311  
*the White*..... 58  
*Squash bug, the*..... 406  
*Staphys tubifera*..... 495  
*Stagger-bush*..... 182, 237, 454  
*Staphylea Bumalda*..... 201  
*Emodi*..... 202  
*pinnata*..... 201  
*trifolia*..... 201  
*Star-flower*..... 182  
*Statice superba*..... 283  
*Stenodus putator*..... 264  
*Stephanandra flexuosa*..... 237  
*Stephanandra floribunda*..... 488  
*Sternbergia lutea*..... 496  
*Stocks, double*..... 458  
*Strawberries*..... 104, 127, 270, 282  
*and bird*..... 176  
*Strawberry, proferous*..... 371  
*Street of Kingston, R. I.*..... 208  
*trees*..... 74  
*Strelitzia augusta*..... 42  
*Streptosolon Jamesoni*..... 33, 141  
*Strophilium Californicum*..... 291  
*Stuartia pentagyna*..... 296, 415  
*Pseudo-camellia*..... 315, 324, 371  
*Styrax Americana*..... 237  
*Japonica*..... 245  
*Obassia*..... 244, 371  
*Suburbs in March, the*..... 27  
*Sumach*..... 143, 154, 369, 362  
*Italian*..... 500  
*Sundew*..... 243  
*Swanley horticultural college*..... 266  
*Sweet Briar*..... 266  
*Peas*..... 43, 83, 308  
*Pepper bush*..... 290  
*Swiss forest laws*..... 477  
*Symplocos paniculata*..... 213, 287, 408  
*Syringa Amurensis*..... 222, 453  
*Chinensis*..... 221, 453  
*Emodi*..... 222, 479, 520  
*Japonica*..... 222, 453  
*Josikaea*..... 222  
*oblata*\*..... 221, 453  
*Pekinensis*..... 222, 453  
*Persica*..... 222  
*pubescens*\*..... 222, 414  
*rotundifolia*..... 222  
*sempervirens*..... 222  
*villosa*\*..... 222, 453, 520  
*vulgaris*..... 125, 196, 220  
*Suburban lots, plan for*..... 111
- T**  
*Tabebuia longipes*..... 120  
*Tagetes lucida*..... 473  
*Tasconia Paritae*..... 204  
*Taste in florists' arrangements*..... 409  
*Taxodium distichum*..... 314, 432, 484  
*Tecoma stans*..... 520  
*Temple in Japan, a*\*..... 88  
*Nikko*\*..... 434  
*Tennessee flowers*..... 525  
*Tennis-lawn, making a*..... 357  
*Terrace and veranda*..... 170, 275  
*Tetranychus telarius*..... 459  
*tiliarum*..... 459  
*Texas State Horticultural Society*..... 228  
*Thermopsis fabacea*..... 200  
*Thiergarten, Berlin, bridge in*..... 327  
*Thomomys umbrinus*..... 190  
*Thorns, American*..... 14, 19  
*Thunbergia affinis*..... 48  
*Thunba alba*..... 235  
*Veitchii*..... 248  
*Thuya gigantea*..... 314  
*Thuyopsis borealis*..... 257  
*Tiarella cordifolia*..... 200  
*Todesia Pringlei*..... 388  
*Tilia dasystyla*..... 332  
*argentea*..... 231, 312  
*penolosa*..... 231, 312  
*Tillage, surface*..... 392  
*Timber, influence of undergrowth on*..... 93  
*preservation of*..... 594  
*Timber-orer, work of a*..... 172  
*Todesia Barbara*..... 288  
*Tomatoes*..... 352, 492  
*Ton dressing for trees*..... 488  
*Tonia Pournieri*..... 570  
*Toxicophaga spectabilis*..... 293  
*Transplanting*..... 92  
*Tree-guards, wire netting for*..... 7  
*Tree notes*..... 179  
*planted letters*..... 182  
*planting*..... 85, 203  
*on Boston Harbor*..... 24  
*in California*..... 82  
*what is a*..... 499  
*Trees and shrubs for a trying climate*..... 206, 265  
*artistic aspect of*..... 218, 230, 242, 373  
*autumn work among*..... 421  
*for planting in America*..... 61  
*hardy*..... 406  
*in Central Park*..... 312  
*in Washington*..... 254, 347  
*injuries to shade*..... 469  
*newly transplanted*..... 199  
*pruning*..... 488  
*street*..... 74  
*rejuvenescence of old*\*..... 349  
*sentimental objections to fell-*  
*ing*..... 325, 397  
*top-dressing for*..... 488  
*Trevesia palmata*..... 371  
*Trilacids*..... 69  
*Trichopilia grata*..... 344  
*Lehmanni*..... 348  
*Trichosma suavis*..... 499  
*Tristalis Americana*..... 182  
*Trillium grandiflorum*..... 150, 153, 165  
*Tritonia aurea*..... 388, 450  
*Tropaeolum Lobbianum*..... 473  
*Tropical garden, a*\*..... 222  
*Truffes, cultivation of*..... 194  
*Tubercles on leguminous roots*..... 135  
*Tulipa acuminata*..... 177, 188  
*Hiebersteiniana*..... 200  
*Clusiana*..... 188  
*elegans*..... 188  
*erythrocarpum*..... 177  
*grandiflorum*..... 177  
*Greigi*..... 163  
*Kalpakowskyana*..... 173  
*Kaufmanniana*..... 163  
*Kesselringii*..... 141  
*oculis-solis*..... 163  
*reflexa*..... 188  
*suaveolens*..... 177  
*syvestris*..... 177  
*undulatifolia*..... 177  
*Tulip trees*..... 254  
*Tunis, forests of*..... 71  
*Turnip, white*..... 484  
*Tussock-moth*..... 314  
*Twin-leaf*..... 165  
*Typha angustifolia*..... 495  
*latifolia*..... 495
- U**  
*Ulex Europaeus*..... 442  
*Ulmus campestris*..... 382, 516  
*effusa*..... 381  
*montana*..... 516  
*parvifolia*..... 231, 312  
*Undergrowth, influence of, on tim-*  
*ber*..... 93  
*Ungnadia speciosa*..... 524  
*United States, forests of the*..... 297  
*Urena terna*..... 108  
*Ursinia pulchra*..... 497  
*Utricularia imbricata*..... 243  
*longifolia*..... 120  
*montana*..... 204  
*rhynchophylla*..... 88  
*Uvularia grandiflora*..... 153
- V**  
*Vaccinium corymbosum*..... 440  
*macrocarpum*..... 519  
*Vallota purpurea*..... 329  
*Vancouver Island, forests of*..... 46  
*Vancouveria hexandra*..... 225  
*Vandas*..... 60, 248, 452, 464, 475, 499, 520  
*Vanilla flower and its fertilization*..... 108  
*Mexicana*..... 524



- Manuelia corymbosa*..... 524  
 Vegetable garden, the, 246, 258, 283, 305,  
     319, 355, 366, 377, 389, 438, 460, 513  
     growth on animals, a curious, 99  
 Vegetables, new..... 4, 31  
     frames..... 450  
     under glass..... 518  
 Verbenas, red mite on..... 20  
*Viburnum acerifolium*..... 249, 440  
     cassinioides..... 249, 384, 453  
     cotinifolium..... 464  
     dentatum..... 249, 384, 453  
     dilatatum..... 225  
     Lantana..... 201, 226, 464  
     Lentago..... 226, 453  
     macrocephalum..... 226  
     nudum..... 453  
     opulus..... 232, 453  
     plicatum..... 232  
     prunifolium..... 220, 453  
     pubescens..... 225, 440  
*Victoria Regia*\*..... 309, 316  
 Villas and their doorways..... 133  
*Vincetoxicum acuminatum*..... 225  
 Vines, hardness of..... 199  
 Vineyard, notes from a New Jersey..... 356  
*Viola Canadensis*..... 271  
*Viola cucullata*..... 150, 163, 494  
     pedata..... 150, 210  
     pubescens..... 188  
*Virginia*..... 93, 398, 454  
*Vitex incisa*..... 356  
*Vitis Arizonica*..... 524  
     indivisa..... 297  
     pterophora..... 228  
     vinifera..... 372  
*Vochysia Guatemalensis*..... 503  
*Vriesea Wittmackiana*..... 479
- W**
- Waldsteinia fragoides*..... 188  
 Walks and drives..... 193  
 Walnut, the Black..... 106, 394, 500  
 Washington, trees in..... 254, 347  
 Washington Oak at Fishkill, the\*..... 511  
 Washington Square, New York..... 335  
*Washingtonia filifera*..... 231  
     robusta..... 231  
 Water, artificial\*..... 8  
 Water lilies..... 241, 263, 368  
     shield..... 243  
 Wayside beauty\*..... 42  
 Weeds..... 271
- Wellesley, the Charles River at..... 422  
 West Indian fruit growing..... 421  
 White Mountains, forests of the, 2, 70, 493  
 Why we do not buy growing plants..... 121  
 Wild-flowers, exhibition of..... 278  
     some hardy..... 31  
 Willow, the Black..... 106  
 Willows, two interesting..... 246  
 Wilmington, Del., park in..... 12  
 Wind-breaks, rules for planting..... 46  
 Window gardening..... 243, 383, 410, 474  
 Winter, plantation for..... 98  
     flowers in..... 98  
 Wintergreen..... 519  
*Wistaria Sinensis*..... 213, 232, 492  
*Wolffia microscopica*..... 492  
 Wood-wax..... 272, 442  
 Wood picture, a..... 303  
     sorrel..... 303, 494  
     in autumn, a California..... 422  
 Woodland tragedy, a..... 351  
 Woodlands, care of..... 333  
*Woodia glabella*..... 355  
     hyperborea..... 355  
     ilvensis..... 355  
     obtus..... 355  
*Woodwardia angustifolia*..... 341
- Woodwardia Virginica*..... 341  
 Work of a timber-borer..... 172
- X**
- Xerophyllum asphodeloides*..... 182
- Y**
- Yellow-root..... 154, 464  
     wood, the\*..... 93, 398, 454  
 Yellowstone Park..... 75, 129  
*Yucca filifera*\*..... 78, 276  
     Treculana\*..... 54
- Z**
- Zanthoxylum capitifolia*..... 154, 464  
*Zephyranthes candida*..... 459, 519  
     crinata..... 519  
 Zinc labels..... 516  
*Zinnia linnaris*..... 270  
*Zizophus lycioides*..... 524  
*Zygopetalum citrinum*..... 271  
     brachypetalum..... 348  
     Sedoni..... 281

## ILLUSTRATIONS.

- A**
- Acidanthera bicolor*..... 486, 487  
 Alameda of Chihuahua, the..... 104  
*Amelanchier alnifolia*..... 185  
     oligocarpa..... 247  
*Aquilegia longissima*..... 31  
 Arizona Garden, Monterey, view in..... 403  
 Arnold Arboretum, entrance to..... 17  
 Artificial water..... 8  
 Artificially fertilized flowers, pro-  
     tection of..... 339
- B**
- Beech, a weeping..... 32  
*Berberis Fendleri*..... 462  
     Fremonti..... 497  
 Berlin, bridge in the Thiergarten..... 329  
 Bridge at Leatherer, England..... 53  
     in the Thiergarten, Berlin..... 339  
*Brodiaea Bridgesii*..... 126  
 Buffalo Park, views in proposed..... 457  
     design map of..... 463  
 Bulbs, hardy, blooming in the  
     grass..... 306
- C**
- Cabbage-leaf, malformed..... 296, 392  
*Camassia Cusickii*..... 174  
*Cattleya Gigas*, white flowered..... 437  
 Central Park, New York, view in..... 30  
     meadows in..... 125  
     Minneapolis, view in..... 379  
 Charleco Hall, court-yard of..... 173  
 Charles River at Wellesley, the..... 427  
 Cherokee Rose, the..... 235  
 Chihuahua, the Alameda of..... 104  
 Chinese crab-apple, double flow-  
     ered..... 265  
     Narcissus, in water..... 44  
*Chionophila Jamesii*..... 80  
*Chrysanthemum*, Lilian B. Bird..... 512  
     Mrs. Alpheus Hardy..... 5  
     hair of..... 5  
*Chrysanthemums*, a garden of..... 586  
 Cone-worms..... 351  
 Country road, a..... 42  
 Court-yard of Charleco Hall..... 173  
 Crab-apple, Chinese, double flow-  
     ered..... 265  
*Cypripedium Californicum*..... 281  
     fasciculatum..... 90
- D**
- Delphinium viride*..... 150  
*Deutzia parviflora*..... 365
- E**
- Elaeagnus longipes*..... 499  
 Entrance to the Arnold Arboretum..... 17  
*Erythronium Hendersoni*..... 36
- F**
- Fig tree, the wild, of Florida..... 128  
 Flower-border, a well arranged..... 17
- G**
- Garden, a tropical..... 223  
     of chrysanthemums, a..... 523  
 Ginkgo tree, the..... 175  
 Grapevines, methods of pruning..... 461  
 Gray, Asa (supplement to No. 2).
- H**
- Hardy bulbs blooming in the grass..... 306  
*Heliconia Chocomaiana*..... 162  
*Hibiscus lasiocarpus*..... 426  
 Hickory borer, the..... 149  
 Homestead, plan for a small..... 111, 113  
 House at Honmoku, Japan..... 319  
*Hymenocallis humilis*..... 114  
     Palmeri..... 139
- I**
- Iris bracteata*..... 43  
     Japanese, a bed of..... 259  
     longigata, flower of..... 402  
     lunus..... 7
- J**
- Japanese apple, double flowered..... 152  
     flower vender's basket, a..... 343  
     Iris, a bed of..... 259  
     temples..... 89, 439
- K**
- Kingston, R. I., main street of..... 209
- L**
- Leland Stanford, Jr., University,  
     plan of the..... 508  
*Lilium Grayi*..... 19  
 Live Oak, the..... 475  
*Lycium pallidum*..... 341
- M**
- Magnolia hypoleuca*..... 305  
     Thompsoniana..... 269  
 Main street, Kingston, R. I..... 209  
 Marned cabbage-leaf..... 296, 392  
 Meadows in Central Park, N. Y., the..... 125  
 Mesquit forest in Arizona, a..... 116  
 Monterey, view in a garden of..... 403
- N**
- Narcissus*, Chinese, in water..... 44  
 New Jersey pine-forest, a..... 164  
 Nikko, Japan, entrance to temples  
     at..... 439  
*Nymphaea tuberosa*..... 367  
     root stock of..... 366
- O**
- Oak, the Live..... 476  
     the Washington, at Fishkill..... 510  
 Olive tree in the Garden of Geth-  
     semane..... 284
- P**
- Paris square, plan of a..... 265  
 Park, meadows in Central..... 125  
     Minneapolis..... 374  
*Pentstemon rotundifolius*..... 473  
*Philadelphus Coulteri*..... 233  
*Phlox adsurgens*..... 66  
     nana..... 413  
     Stellaria..... 257  
*Photinia villosa*..... 67  
 Pine-forest, a New Jersey..... 164  
*Pinus ponderosa pendula*..... 391  
*Pitcairnia Jaliscana*..... 19  
     Palmeri..... 211  
 Plan for a small homestead..... 111, 113  
     of a Paris Square..... 265  
 Protection of artificially fertilized  
     flowers..... 339  
 Pruning grape vines, methods of..... 461  
     methods of..... 349  
*Prunus Miqueliana*..... 199  
     Padus..... 295  
     pendula..... 198  
*Pseudophoeux Sargentii*..... 353  
     fruit of..... 355
- Q**
- Quercus oblongifolia*..... 140
- R**
- Red mite, the..... 20  
*Rhododendron arborescens*..... 401  
     Vaseyi..... 377  
     brachycarpum..... 293  
*Rosa minutifolia*..... 102  
     Nuttiana..... 449
- S**
- Sack for protecting artificially fer-  
     tilized flowers..... 339  
 "Sandyside," Yarmouth, Victoria  
     tank at..... 308  
 Santa Rita foothills, the..... 140  
*Shorea galacifolia*..... 509  
 Slopes, good and bad..... 326  
 Sonora hillside, a..... 187  
*Spiraea pubescens*..... 331  
     trilobata..... 452  
*Syringa oblata*..... 221  
     pubescens..... 415  
     villosa..... 521
- T**
- Temples, Japanese..... 89, 439  
 Thiergarten, Berlin, bridge in the..... 329  
*Tigridia Pringlei*..... 389  
 Tropical garden, a..... 223
- V**
- Victoria tank at "Sandyside," Yar-  
     mouth..... 308
- W**
- Washington Oak at Fishkill, the..... 510  
 Water lilies at Buitenzorg..... 245  
 Wild flowers for exhibition..... 279  
 Wolstenholthe, Pinus ponderosa at..... 391
- Y**
- Yellow wood, the..... 92  
*Yucca filifera*..... 78, 79  
     Treculana..... 55



# GARDEN AND FOREST

A JOURNAL OF HORTICULTURE  
LANDSCAPE ART AND FORESTRY

FEBRUARY 29, 1888.

PRICE TEN CENTS.]

Copyright, 1888, by THE GARDEN AND FOREST PUBLISHING COMPANY, LIMITED.

[\$4.00 A YEAR, IN ADVANCE.]

## IMPORTANT NEW BOOKS.

I.  
By WILLIAM DEAN HOWELLS.

**APRIL HOPES.** A Novel. By WILLIAM DEAN HOWELLS.  
12mo, Cloth, \$1 50.

*Mr. Howells never wrote a more bewitching book. It is useless to deny the rarity and worth of the skill that can report so perfectly and with such exquisite humor the manifold emotions of the modern maiden and her lover.—Philadelphia Press.*

**MODERN ITALIAN POETS.** Essays and Versions. By WILLIAM DEAN HOWELLS. Author of "April Hopes," &c. With Portraits. 12mo, Half Cloth, Uncut Edges and Gilt Tops, \$2 00.

*A portfolio of delightful studies. . . . No acute and penetrating critic surpasses Mr. Howells in true insight, in polished irony, in effective and yet graceful treatment of his theme, in that light and indescribable touch that fixes your eye on the true heart and soul of the theme.—Critic, N. Y.*

II.  
**CONCLUSION OF KINGLAKE'S CRIMEAN WAR.**

**KINGLAKE'S CRIMEAN WAR.** The Invasion of the Crimea: its Origin, and an account of its Progress down to the Death of Lord Raglan. By ALEXANDER WILLIAM KINGLAKE. With Maps and Plans. Five Volumes now ready. 12mo, Cloth, \$2 00 per vol.

Vol. V. From the Morrow of Inkerman to the Fall of Canrobert; just published.—Vol. VI. From the Rise of Pelissier to the Death of Lord Raglan—completing the work—nearly ready.

*The charm of Mr. Kinglake's style, the wonderful beauty of his pictures, the subtle irony of his reflections, have made him so long a favorite and companion that it is with unfeigned regret we read the word "farewell" with which these volumes close.—Pall Mall Gazette, London.*

III.  
**T. ADOLPHUS TROLLOPE'S AUTOBIOGRAPHY.**

**WHAT I REMEMBER.** By T. ADOLPHUS TROLLOPE. With Portrait. 12mo, Cloth, \$1 75.

*The most delightful pot-pourri that we could desire of the time just anterior to our own. . . . Mr. Trollope preserves for us delightful, gay stories of his youth and the youth of his century, and gives us glimpses of loved or worshipped faces banished before our time. Hence the success of these written remembrances.—Academy, London.*

IV.  
BY THE AUTHOR OF "SELF-HELP."

**LIFE AND LABOR; or, Characteristics of Men of Industry, Culture, and Genius.** By SAMUEL SMILES, LL.D., Author of "Self-Help," &c. 12mo, Cloth, \$1 00.

*Commends itself to the entire confidence of readers. Dr. Smiles writes nothing that is not fresh, strong, and magnetically bracing. He is one of the most helpful authors of the Victorian era. . . . This is just the book for young men.—N. Y. Journal of Commerce.*

V.  
**THOMAS W. HIGGINSON'S NEW BOOK.**

**WOMEN AND MEN.** By THOMAS W. HIGGINSON, Author of "A Larger History of the United States," &c. 16mo, Cloth, \$1 00.

*These essays are replete with common-sense ideas, expressed in well-chosen language, and reflect on every page the humor, wit, wisdom of the author.—N. Y. Sun.*

VI.

Plain, sensible, sturdy advice.—Chicago News.

**BIG WAGES AND HOW TO EARN THEM.** By A FOREMAN. 16mo, Cloth, 75 cents.

*The views of an intelligent observer upon some of the foremost social topics of the day. The style is simple, the logic cogent, and the tone moderate and sensible.—N. Y. Commercial Advertiser.*

*The above works are for sale by all booksellers, or will be sent by HARPER & BROTHERS, postpaid, to any part of the United States and Canada on receipt of price. Catalogue sent on receipt of Ten Cents in postage stamps.*

VII.

The standard authority upon the Inquisition.—Philadelphia Ledger.

**HISTORY OF THE INQUISITION OF THE MIDDLE AGES.**

By HENRY CHARLES LEA. To be completed in THREE VOLUMES. 8vo, Cloth, Uncut Edges and Gilt Tops, \$3 00 per volume. Vols. I. and II. now ready. Vol. III. nearly ready.

*Characterized by the same astounding reach of historical scholarship as made Mr. Lea's "Sacramental Celibacy" the wonder of European scholars. But it seems even to surpass his former works in judicial repose and in the mastery of materials. Of Mr. Lea's predecessors no one is so like him as Gibbon.—Sunday-School Times, Philadelphia.*

VIII.

THE NAVIES OF THE UNITED STATES AND OF EUROPE.

**MODERN SHIPS OF WAR.** By SIR EDWARD J. REED, M. P., late Chief Constructor of the British Navy, and EDWARD SIMPSON, Rear-Admiral U.S.N., late President of the U.S. Naval Advisory Board. With Supplementary Chapters and Notes by J. D. JERROLD KELLEY, Lieutenant U.S.N. Illustrated. Square 8vo, Cloth, Ornamental, \$2 50.

*This is the most valuable contribution yet made to the popular literature of modern navies. . . . The whole country is indebted to the authors and to the publishers for a book on men-of-war that both in matter and make-up is without an equal.—N. Y. Herald.*

IX.

Full, from beginning to end, with good stories.—Saturday Review, London.

**MY AUTOBIOGRAPHY AND REMINISCENCES.** By W. P. FRITH, R.A. Portrait. 12mo, Cloth, \$1 50.

*The whole round of English autobiography does not comprise a work more full of character, more rich in anecdote, or more fruitful in entertainment for the general reader. A delightful volume.—London Daily News.*

X.

NEGRO TROOPS IN THE REBELLION.

**HISTORY OF THE NEGRO TROOPS IN THE WAR OF THE REBELLION.** 1861-1865. By G. W. WILLIAMS, LL.D. Portrait. 8vo, Cloth, Ornamental, \$1 75.

*Mr. Williams has written an excellent book. He was one of the gallant men whose patriotic deeds he commemorates, and he has made a careful study of all the best accessible records of their achievements. His people may well be proud of the showing.—N. Y. Tribune.*

XI.

\$500 A YEAR FOR A FAMILY.

**FAMILY LIVING ON \$500 A YEAR.** A Daily Reference Book for Young and Inexperienced Housewives. By JULIET CORSON. 16mo, Cloth, Extra, \$1 25.

*Miss Corson has rendered a valuable service by this book, in which she shows conclusively how for five hundred dollars a plentiful, appetizing and varied diet can be furnished throughout the year to a family.—N. Y. Sun.*

XII.

SOME RECENT FICTION.

**CAPTAIN MACDONALD'S DAUGHTER.** By ARCHIBALD CAMPBELL. 16mo, Cloth, \$1 00.

**NARKA, THE NIHILIST.** By KATHLEEN O'MEARA. 16mo, Cloth, Extra, \$1 00.

**MR. ABSALOM BILLINGSLEA, AND OTHER GEORGIAN FOLK.** By R. M. JOHNSTON. Illustrated. 16mo, Cloth, Extra, \$1 25.

**A MAGNIFICENT PLEBEIAN.** By JULIA MAGRIDER. 16mo, Cloth, Extra, \$1 00.

**A PRINCE OF THE BLOOD.** By JAMES PAYN. 16mo, Cloth, 75 cents.

Published by HARPER & BROTHERS, New York.

# GARDEN AND FOREST:

## An Illustrated Weekly Journal of Horticulture, Landscape Art and Forestry.

GARDEN AND FOREST will be devoted to Horticulture in all its branches, Garden Botany, Dendrology and Landscape Gardening, and will discuss Plant Diseases and Insects injurious to vegetation.

Professor C. S. SARGENT, of Harvard College, will have general editorial control of GARDEN AND FOREST.

Professor WM. G. FARLOW, of Harvard College, will have editorial charge of the Department of Cryptogamic Botany and Plant Diseases.

Professor A. S. PACKARD, of Brown University, will have editorial charge of the Department of Entomology.

Mr. WM. A. STILES will be the Managing Editor.

GARDEN AND FOREST will record all noteworthy discoveries and all progress in science and practice within its field at home and abroad. It will place scientific information clearly and simply before the public, and make available for the instruction of all persons interested in garden plants the conclusions reached by the most trustworthy investigators. Arrangements have been made to figure and describe new and little-known plants (especially North American) of horticultural promise. A department will be devoted to the history and description of ornamental trees and shrubs. New florists' flowers, fruits and vegetables will be made known, and experienced gardeners will describe practical methods of cultivation.

GARDEN AND FOREST will report the proceedings of the principal Horticultural Societies of the United States and the condition of the horticultural trade in the chief commercial centres of the country.

GARDEN AND FOREST, in view of the growing taste for rural life, and of the multiplication of country residences in all parts of the United States, especially in the vicinity of the cities and of the larger towns, will make a special feature of discussing the planning and planting of private gardens and grounds, small and large, and will endeavor to assist all who desire to make their home surroundings attractive and artistic. It will be a medium of instruction for all persons interested in preserving and developing the beauty of natural scenery. It will cooperate with Village Improvement Societies and every other organized effort to secure the proper ordering and maintenance of parks and squares, cemeteries, railroad stations, school grounds and roadsides. It will treat of Landscape Gardening in all its phases, reviewing its history and discussing its connection with architecture.

GARDEN AND FOREST will give special attention to scientific and practical Forestry in their various departments, including Forest Conservation and economic Tree Planting, and to all the important questions which grow out of the intimate relation of the forests of the country to its climate, soil, water supply and material development.

Original information on all these subjects will be furnished by numerous American and foreign correspondents.

Among those who have promised contributions to GARDEN AND FOREST are:

Mr. SERENO WATSON, Curator of the Herbarium, Harvard College.	Mr. FREDERICK LAW OLNSTED, Brookline, Mass.	Dr. KARL MOHR, Mobile, Ala.
Prof. GEO. L. GOODALE, Harvard College.	" FRANCIS PARKMAN, Boston.	Hon. J. B. WALKER, Forest Commissioner of New Hampshire.
" WOLCOTT GIBBS, " "	Dr. C. C. PARRY, San Francisco.	Mr. WM. HAMILTON GIBSON, Brooklyn, N. Y.
" WM. H. BREWER, Yale College.	Mr. PROSPER BERCKMANS, President of the American Pomological Society.	" EDGAR T. ENSIGN, Forest Commissioner of Colorado.
" D. G. EATON, " "	" CHARLES A. DANA, New York.	" E. S. CARMAN, Editor of the <i>Rural New Yorker</i> .
" WM. J. BEAL, Agricultural College of Michigan.	" BURNETT LANDRETH, Philadelphia.	" WM. M. CANBY, Wilmington, Del.
" L. H. BAILEY, Jr., " "	" ROBERT RIDGEWAY, Washington, D. C.	" JOHN ROBINSON, Salem, Mass.
" J. L. BUDD, Agricultural College of Iowa.	" CLEVELERT VAUX, New York.	" J. D. LYMAN, Exeter, N. H.
" R. D. HALSTED, " "	" J. B. HARRISON, Franklin Falls, N. H.	" SAMUEL PARSONS, Jr., Superintendent of Central Park, N. Y.
" E. W. HILGARD, University of California.	Dr. HENRY P. WALCOTT, President of the Massachusetts Horticultural Society.	" WM. McMILLAN, Superintendent of Parks, Buffalo, N. Y.
" J. T. ROTHROCK, University of Pennsylvania.	Mr. C. G. PRINGLE, Charlotte, Vt.	" SYLVESTER BAXTER, Boston.
" CHAS. E. BESSEY, University of Nebraska.	" ROBERT DOUGLAS, Waukegan, Ill.	" CHARLES ELIOT, Boston.
" WM. TRELEAVE, Shaw School of Botany, St. Louis.	" H. W. S. CLEVELAND, Minneapolis, Minn.	" JOHN THORPE, Secretary of the New York Horticultural Society.
" T. J. BURRILL, University of Illinois.	" CHAS. W. GARFIELD, Secretary of the American Pomological Society.	" EDWIN LONSDALE, Secretary of the Philadelphia Horticultural Society.
" W. W. BAILEY, Brown University.	" C. R. ORCUTT, San Diego, Cal.	" ROBERT CRAIG, President of the Philadelphia Florists' Club.
" E. A. POPENOE, Agricultural College, Kansas.	" E. E. FERNOW, Chief of the Forestry Division, Washington, D. C.	" SAMUEL R. PARSONS, Flushing, N. Y.
" RAPHAEL PUMPELLY, United States Geological Survey.	" JOHN BIRKENBINE, Secretary of the Pennsylvania Forestry Association.	" GEORGE ALLWANGER, Rochester.
" JAMES H. GARDINER, Director New York State Survey.	" JOSIAH HOOPES, West Chester, Pa.	" P. H. BARKER, Rochester.
" WM. R. LAZENBY, Director of the Ohio Agricultural Experiment Station.	" PETER HENDERSON, New York.	" W. J. STEWART, Boston, Mass.
" W. W. TRACY, Detroit, Mich.	" WM. FALCONER, Glen Cove, N. Y.	" W. A. MARRA, Botanic Gardens, Cambridge, Mass.
" C. V. RILEY, Washington, D. C.	" JACKSON DAWSON, Jamaica Plain, Mass.	" DAVID ALLAN, Mount Vernon, Mass.
Mr. DONALD G. MITCHELL, New Haven, Conn.	" WM. H. HALL, State Engineer, Sacramento, Cal.	" WM. ROBINSON, North Easton, Mass.
" FRANK J. SCOTT, Toledo, O.	" C. C. CROZIER, Department of Agriculture, Washington, D. C.	" A. H. FEWKES, Newton Highlands, Mass.
Hon. ADOLPHE LEUÉ, Secretary of the Ohio Forestry Bureau.	The Rev. E. P. ROE, Cornwall, N. Y.	" F. GOLDRING, Kenwood, N. Y.
" B. G. NORTHRUP, Clinton, Conn.	Dr. C. C. ABBOTT, Trenton, N. J.	" C. M. ATKINSON, Brookline, Mass.
Mr. G. W. HOTCHKISS, Secretary of the Lumber Manufacturers' Association.	Mrs. SCHUYLER VAN RENSSLAER, New York.	
Dr. C. L. ANDERSON, Santa Cruz, Cal.	" MARY TREAT, Vineland, N. J.	

Dr. MAXWELL T. MASTERS, Editor of the <i>Gardener's Chronicle</i> .	M. EDOUARD ANDRÉ, Editor of the <i>Revue Horticole</i> , Paris, France.	M. J. ALLARD, Angers, Maine & Loire, France.
Mr. GEO. NICHOLSON, Curator of the Royal Gardens, Kew.	Dr. G. M. DAWSON, Geological Survey of Canada.	Dr. H. MAYR, University of Tokyo, Japan.
" W. B. HEMSLEY, Herbarium, Royal Gardens, Kew.	Prof. JOHN MACOUN, " "	Prof. D. P. PENHALL, Director of the Botanical Gardens, Montreal.
" WM. GOLDRING, London.	M. CHARLES NAUDIN, Director of the Gardens of the Villa Thuret, Antibes.	Mr. WM. SAUNDERS, Director of the Agricultural Experiment Station, Ontario.
Mr. MAX LEICHTLIN, Baden Baden.	Dr. CHAS. BOLLE, Berlin.	" WM. LITTLE, Montreal.

Single numbers, 10 cents. Subscription price, Four Dollars a year, in advance.

THE GARDEN AND FOREST PUBLISHING CO., Limited,

TRIBUNE BUILDING, NEW YORK

D. A. MUNRO, Manager.

## GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.  
[LIMITED.]

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, FEBRUARY 29, 1888.

## TABLE OF CONTENTS.

EDITORIAL ARTICLES:—	PAGE.
Asa Gray. The Gardener's Monthly. The White Pine in Europe. . . . .	1
The Forests of the White Mountains. . . . .	2
Landscape Gardening.—A Definition. . . . .	2
Floriculture in the United States. . . . .	2
How to Make a Lawn. . . . .	3
Letter from London. . . . .	3
A New Departure in Chrysanthemums. . . . .	4
New Plants from Afghanistan. . . . .	5
Iris Tenais, with figure. . . . .	6
Hardy Shrubs for Forcing. . . . .	6
Plant Notes. . . . .	7
Wire Netting for Tree Guards. . . . .	7
Artificial Water, with Illustration. . . . .	8
Some New Roses. . . . .	8
Two Ferns and Their Treatment. . . . .	9
Timely Hints about Bulbs. . . . .	9
ENTOMOLOGY:—	
Arsenical Poisons in the Orchard. . . . .	9
THE FOREST:—	
The White Pine in Europe. . . . .	10
European Larch in Massachusetts. . . . .	11
Thinning Pine Plantations. . . . .	11
BOOK REVIEWS:—	
Gray's Elements of Botany. . . . .	11
Kansas Forest Trees. . . . .	12
PUBLIC WORKS:—The Falls of Minnehaha—A Park for Wilmington. . . . .	12
FLOWER MARKETS:—New York—Philadelphia—Boston. . . . .	12

## Asa Gray.

THE whole civilized world is mourning the death of Asa Gray with a depth of feeling and appreciation perhaps never accorded before to a scholar and man of science.

To the editors of this Journal the loss at the very outset of their labors is serious indeed. They lose a wise and sympathetic adviser of great experience and mature judgment to whom they could always have turned with entire freedom and in perfect confidence; and they lose a contributor whose vast stores of knowledge and graceful pen might, it was reasonable to hope, have long enriched their columns.

The career of Asa Gray is interesting from many points of view. It is the story of the life of a man born in humble circumstances, without the advantages of early education, without inherited genius—for there is no trace in his yeoman ancestry of any germ of intellectual greatness—who succeeded in gaining through native intelligence, industry and force of character, a position in the very front rank of the scientific men of his age. Among the naturalists who, since Linnæus, have devoted their lives to the description and classification of plants, four or five stand out prominently in the character and importance of their work. In this little group Asa Gray has fairly won for himself a lasting position. But he was something more than a mere systematist. He showed himself capable of drawing broad philosophical conclusions from the dry facts he collected and elaborated with such untiring industry and zeal. This power of comprehensive generalization he showed in his paper upon the "Characters of Certain New Species of Plants Collected in Japan" by Charles Wright, published nearly thirty years ago. Here he first pointed out the extraordinary similarity between the Floras of Eastern North America and Japan, and then explained the peculiar distribution of plants through the northern hemisphere by tracing their

direct descent through geological eras from ancestors which flourished in the arctic regions down to the latest tertiary period. This paper was Professor Gray's most remarkable and interesting contribution to science. It at once raised him to high rank among philosophical naturalists and drew the attention of the whole scientific world to the Cambridge botanist.

Asa Gray did not devote himself to abstract science alone; he wrote as successfully for the student as for the professional naturalist. His long list of educational works have no equals in accuracy and in beauty and compactness of expression. They have had a remarkable influence upon the study of botany in this country during the half century which has elapsed since the first of the series appeared.

Botany, moreover, did not satisfy that wonderful intellect, which hard work only stimulated but did not weary, and one of Asa Gray's chief claims to distinction is the prominent and commanding position he took in the great intellectual and scientific struggle of modern times, in which, almost alone and single handed he bore in America the brunt of the disbelief in the Darwinian theory shared by most of the leading naturalists of the time.

But the crowning labor of Asa Gray's life was the preparation of a descriptive work upon the plants of North America. This great undertaking occupied his attention and much of his time during the last forty years of his life. Less fortunate than his greatest botanical contemporary, George Bentham, who turned from the last page of corrected proof of his work upon the genera of plants to the bed from which he was never to rise again, Asa Gray's great work is left unfinished. The two volumes of the "Synoptical Flora of North America" will keep his memory green, however, as long as the human race is interested in the study of plants.

But his botanical writings and his scientific fame are not the most valuable legacy which Asa Gray has left to the American people. More precious to us is the example of his life in this age of grasping materialism. It is a life that teaches how industry and unselfish devotion to learning can attain to the highest distinction and the most enduring fame. Great as were his intellectual gifts, Asa Gray was greatest in the simplicity of his character and in the beauty of his pure and stainless life.

It is with genuine regret that we read the announcement of the discontinuance of the *Gardener's Monthly*. It is like reading of the death of an old friend. Ever since we have been interested in the cultivation of flowers we have looked to the *Monthly* for inspiration and advice, and its pages have rarely been turned without finding the assistance we stood in need of. But, fortunately, the *Gardener's Monthly*, and its modest and accomplished editor, Mr. Thomas Meehan, were one and the same thing. It is Mr. Meehan's long editorial experience, high character, great learning and varied practical knowledge, which made the *Gardener's Monthly* what it was. These, we are happy to know, are not to be lost to us, as Mr. Meehan will, in a somewhat different field and with new associates, continue to delight and instruct the horticultural public.

Americans who visit Europe cannot fail to remark that in the parks and pleasure grounds of the Continent no coniferous tree is more graceful when young or more dignified at maturity than our White Pine. The notes of Dr. Mayr, of the Bavarian Forest Academy, in another column, testify that it holds a position of equal importance as a forest tree for economic planting. It thrives from Northern Germany to Lombardy, corresponding with a range of climate in this country from New England to Northern Georgia. It needs bright sunshine, however, and perhaps it is for lack of this that so few good specimens are seen in England. It was among the first of our trees to be introduced there, but it has been universally pronounced an indifferent grower.

### The Forests of the White Mountains.

NEW HAMPSHIRE is not a peculiarly wealthy State, but it has some resources scarcely equaled by those of any of its sisters. The White Mountains, though worth little to the farmer, are a piece of real estate which yields a sure and abundant income by attracting tourists and their money; and this revenue is certain to increase, unless blind mismanagement interposes. The White Mountains are at present unique objects of attraction; but they may easily be spoiled, and the yearly tide of tourists will then be turned towards other points of interest whose owners have had more sense and foresight.

These mountains owe three-fourths of their charms to the primeval forest that still covers them. Speculators have their eyes on it, and if they are permitted to work their will the State will find a most productive piece of property sadly fallen in value. If the mountains are robbed of their forests they will become like some parts of the Pyrenees, which, though much higher, are without interest, because they have been stripped bare.

The forests of the White Mountains have a considerable commercial value, and this value need not be sacrificed. When lumber speculators get possession of forests they generally cut down all the trees and strip the land at once, with an eye to immediate profit. The more conservative, and, in the end, the more profitable management, consists in selecting and cutting out the valuable timber when it has matured, leaving the younger growth for future use. This process is not very harmful to the landscape. It is practiced extensively in Maine, where the art of managing forests with a view to profit is better understood than elsewhere in this country. A fair amount of good timber may thus be drawn from the White Mountains, without impairing their value as the permanent source of a vastly greater income from the attraction they will offer to an increasing influx of tourists. At the same time the streams flowing from them, and especially the Pemigewasset, a main source of the Merrimac, will be saved from the alternate droughts and freshets to which all streams are exposed that take their rise in mountains denuded of forests. The subject is one of the last importance to the mill owners along these rivers.

*F. Parham.*

### Landscape Gardening.—A Definition.

SOME of the Fine Arts appeal to the ear, others to the eye. The latter are the Arts of Design, and they are usually named as three—Architecture, Sculpture and Painting. A man who practices one of these in any of its branches is an artist; other men who work with forms and colors are at the best but artisans. This is the popular belief. But in fact there is a fourth art which has a right to be rated with the others, which is as fine as the finest, and which demands as much of its professors in the way of creative power and executive skill as the most difficult. This is the art whose purpose it is to create beautiful compositions upon the surface of the ground.

The mere statement of its purpose is sufficient to establish its rank. It is the effort to produce organic beauty—to compose a beautiful whole with a number of related parts—which makes a man an artist; neither the production of a merely useful organism nor of a single beautiful detail suffices. A clearly told story or a single beautiful word is not a work of art—only a story told in beautifully connected words. A solidly and conveniently built house, if it is nothing more, is not a work of architecture, nor is an isolated stone, however lovely in shape and surface. A delightful tint, a graceful line, does not make a picture; and though the painter may reproduce ugly models he must put some kind of beauty into the reproduction if it is to be esteemed above any other manufactured article—if not beauty of form, then beauty of color or of meaning or at least of execution. Similarly, when a man

disposes the surface of the soil with an eye to crops alone he is an agriculturist; when he grows plants for their beauty as isolated objects he is a horticulturist; but when he disposes ground and plants together to produce organic beauty of effect, he is an artist with the best.

Yet though all the fine arts are thus akin in general purpose they differ each from each in many ways. And in the radical differences which exist between the landscape-gardener's and all the others we find some reasons why its affinity with them is so commonly ignored. One difference is that it uses the same materials as nature herself. In what is called "natural" gardening it uses them to produce effects which under fortunate conditions nature might produce without man's aid. Then, the better the result, the less likely it is to be recognized as an artificial—artistic—result. The more perfectly the artist attains his aim, the more likely we are to forget that he has been at work. In "formal" gardening, on the other hand, nature's materials are disposed and treated in frankly unnatural ways; and then—as a more or less intelligent love for natural beauty is very common to-day, and an intelligent eye for art is rare—the artist's work is apt to be resented as an impertinence, denied its right to its name, called a mere contorting and disfiguring of his materials.

Again, the landscape-gardener's art differs from all others in the unstable character of its productions. When surfaces are modeled and plants arranged, nature and the artist must work a long time together before the true result appears; and when once it has revealed itself, day to day attention will be forever needed to preserve it from the deforming effects of time. It is easy to see how often neglect or interference must work havoc with the best intentions, how often the passage of years must travesty or destroy the best results, how rare must be the cases in which a work of landscape art really does justice to its creator.

Still another thing which affects popular recognition of the art as such is our lack of clearly understood terms by which to speak of it and of those who practice it. "Gardens" once meant pleasure-grounds of every kind and "gardener" then had an adequately artistic sound. But as the significance of the one term has been gradually specialized, so the other has gradually come to denote a mere grower of plants. "Landscape gardener" was a title first used by the artists of the eighteenth century to mark the new tendency which they represented—the search for "natural" as opposed to "formal" beauty; and it seemed to them to need an apology as savoring, perhaps, of grandiloquence or conceit. But as taste declined in England it was assumed by men who had not the slightest right, judged either by their aims or by their results, to be considered artists, and to-day it is fallen into such disesteem that it is often replaced by "landscape architect." This title has French usage to support it and is in many respects a good one. But its correlative—"landscape architecture"—is unsatisfactory; and so, on the other hand, is "landscape artist," though "landscape art" is an excellent generic term. Perhaps the best we can do is to keep to "landscape gardener" and try to remember that it ought always to mean an artist, and an artist only.

*M. G. van Rensselaer.*

### Floriculture in the United States.

AT the beginning of the present century, it is not probable that there were 100 florists in the United States, and their combined green-house structures could not have exceeded 50,000 square feet of glass. There are now more than 10,000 florists distributed through every State and Territory in the Union and estimating 5,000 square feet of glass to each, the total area would be 50,000,000 feet, or about 1,000 acres of green-houses. The value of the bare structures, with heating apparatus, at 60 cents per square foot would be \$30,000,000, while the stock of plants grown in them would not be less than

twice that sum. The present rate of growth in the business is about 25% per annum, which proves that it is keeping well abreast of our most flourishing industries.

The business, too, is conducted by a better class of men. No longer than thirty years ago it was rare to find any other than a foreigner engaged in commercial floriculture. These men had usually been private gardeners, who were mostly uneducated, and without business habits. But to-day, the men of this calling compare favorably in intelligence and business capacity with any mercantile class.

Floriculture has attained such importance that it has taken its place as a regular branch of study in some of our agricultural colleges. Of late years, too, scores of young men in all parts of the country have been apprenticing themselves to the large establishments near the cities, and already some of these have achieved a high standing; for the training so received by a lad from sixteen to twenty, better fits him for the business here than ten years of European experience, because much of what is learned there would prove worse than useless here. The English or German florist has here to contend with unfamiliar conditions of climate and a manner of doing business that is novel to him. Again he has been trained to more deliberate methods of working, and when I told the story a few years ago of a workman who had potted 10,000 cuttings in two inch pots in ten consecutive hours, it was stigmatized in nearly every horticultural magazine in Europe as a piece of American bragging. As a matter of fact this same workman two years later, potted 11,500 plants in ten hours, and since then several other workmen have potted plants at the rate of a thousand per hour all day long.

Old world conservatism is slow to adopt improvements. The practice of heating by low pressure steam will save in labor, coal and construction one-fifth of the expense by old methods, and nearly all the large green-house establishments in this country, whether private or commercial, have been for some years furnished with the best apparatus. But when visiting London, Edinburgh and Paris in 1885, I neither saw nor heard of a single case where steam had been used for green-house heating. The stress of competition here has developed enterprise, encouraged invention and driven us to rapid and prudent practice, so that while labor costs at least twice as much as it does in Europe, our prices both at wholesale and retail, are lower. And yet I am not aware that American florists complain that their profits compare unfavorably with those of their brethren over the sea.

Commercial floriculture includes two distinct branches, one for the production of flowers and the other for the production of plants. During the past twenty years the growth in the flower department of the business has outstripped the growth of the plant department. The increase in the sale of Rosebuds in winter is especially noteworthy. At the present time it is safe to say that one-third of the entire glass structures in the United States are used for this purpose; many large growers having from two to three acres in houses devoted to Roses alone, such erections costing from \$50,000 to \$100,000 each, according to the style in which they are built.

More cut flowers are used for decoration in the United States than in any other country, and it is probable that there are more flowers sold in New York than in London with a population four times as great. In London and Paris, however, nearly every door-yard and window of city and suburb show the householder's love for plants, while with us, particularly in the vicinity of New York (Philadelphia and Boston are better), the use of living plants for home decoration is far less general.

There are fashions in flowers, and they continually change. Thirty years ago thousands of Camellia flowers were retailed in the holiday season for \$1 each, while Rosebuds would not bring a dime. Now, many of the fancy Roses sell at \$1 each, while Camellia flowers go begging at ten cents. The Chrysanthemum is now rivaling the Rose, as well it may, and no doubt every decade will see

the rise and fall of some floral favorite. But beneath these fitting fancies is the substantial and unchanging love of flowers that seems to be an original instinct in man, and one that grows in strength with growing refinement. Fashion may now and again condemn one flower or another, but the fashion of neglecting flowers altogether will never prevail, and we may safely look forward in the expectation of an ever increasing interest and demand, steady improvement in methods of cultivation, and to new and attractive developments in form, color and fragrance.

Peter Henderson.

### How to Make a Lawn.

"A SMOOTH, closely shaven surface of grass is by far the most essential element of beauty on the grounds of a suburban home." This is the language of Mr. F. J. Scott, and it is equally true of other than suburban grounds. A good lawn then is worth working for, and if it have a substantial foundation, it will endure for generations, and improve with age.

We take it for granted that the drainage is thorough, for no one would build a dwelling on water soaked land. No labor should be spared in making the soil deep, rich and fine in the full import of the words, as this is the stock from which future dividends of joy and satisfaction are to be drawn. Before grading, one should read that chapter of Downing's on "The Beauty in Ground." This will warn against terracing or leveling the whole surface, and insure a contour with "gentle curves and undulations," which is essential to the best effects.

If the novice has read much of the conflicting advice in books and catalogues, he is probably in a state of bewilderment as to the kind of seed to sow. And when that point is settled it is really a difficult task to secure pure and living seeds of just such species as one orders. Rarely does either seller or buyer know the grasses called for, especially the finer and rarer sorts; and more rarely still does either know their seeds. The only safe way is to have the seeds tested by an expert. Mr. J. B. Olcott, in a racy article in the "Report of the Connecticut Board of Agriculture for 1886," says, "Fifteen years ago nice people were often sowing timothy, red top and clover for door-yards, and failing wretchedly with lawn-making, while seedsmen and gardeners even disputed the identity of our June grass and Kentucky blue-grass."

We have passed beyond that stage of ignorance, however; and to the question what shall we sow, Mr. Olcott replies: "Rhode Island bent and Kentucky blue-grass are their foolish trade names, for they belong no more to Kentucky or Rhode Island than to other Northern States. Two sorts of fine *Agrostis* are honestly sold under the trade name of Rhode Island bent, and, as trade goes, we may consider ourselves lucky if we get even the coarser one. The finest—a little the finest—*Agrostis canina*—is a rather rare, valuable, and elegant grass, which should be much better known by grass farmers, as well as gardeners than it is. These are both good lawn as well as pasture grasses." The grass usually sold as Rhode Island bent is *Agrostis vulgaris*, the smaller red top of the East and of Europe. This makes an excellent lawn. *Agrostis canina* has a short, slender, projecting awn from one of the glumes; *Agrostis vulgaris* lacks this projecting awn. In neither case have we in mind what Michigan and New York people call red top. This is a tall, coarse native grass often quite abundant on low lands, botanically *Agrostis alba*.

Sow small red top or Rhode Island bent, and June grass (Kentucky blue grass, if you prefer that name), *Poa pratensis*. If in the chaff, sow in any proportion you fancy, and in any quantity up to four bushels per acre. If evenly sown, less will answer, but the thicker it is sown the sooner the ground will be covered with fine green grass. We can add nothing else that will improve this mixture, and either alone is about as good as both. A little white clover or sweet vernal grass or sheep's fescue may be added, if you fancy them, but they will not improve the appearance of the lawn. Roll the ground after seeding. Sow the seeds in September or in March or April, and under no circumstance yield to the advice to sow a little oats or rye to "protect the young grass." Instead of protecting, they will rob the slender grasses of what they most need.

Now wait a little. Do not be discouraged if some ugly weeds get the start of the numerous green hairs which slowly follow. As soon as there is anything to be cut, of weeds or grass, mow closely, and mow often, so that nothing need be raked from the ground. As Olcott puts it, "Leave one crop where it belongs."



for home consumption. The rains will wash the soluble substance of the wilted grass into the earth to feed the growing roots." During succeeding summers as the years roll on, the lawn should be perpetually enriched by the leaching of the short leaves as they are often mown. Neither leave a very short growth nor a very heavy growth for winter. Experience alone must guide the owner. If cut too closely, some of it may be killed or start too late in spring; if left too high during winter, the dead long grass will be hard to cut in spring and leave the stubble unsightly. After passing through one winter the annual weeds will have perished and leave the grass to take the lead. Perennial weeds should be faithfully dug out or destroyed in some way.

Every year, add a top dressing of some commercial fertilizer or a little finely pulverized compost which may be brushed in. No one will disfigure his front yard with coarse manure spread on the lawn for five months of the year.

If well made, a lawn will be a perpetual delight as long as the proprietor lives, but if the soil is thin and poor, or if the coarser grasses and clover are sown instead of those named, he will be much perplexed, and will very likely try some expensive experiments, and at last blow up, properly fit the land and begin over again. This will make the cost and annoyance much greater than at first, because the trees and shrubs have already filled many portions of the soil. A small piece, well made and well kept, will give more satisfaction than a larger plot of inferior turf.

W. J. Beal.

### Horticultural Exhibitions in London.

At a late meeting of the floral committee of the Royal Horticultural Society at South Kensington among many novelties was a group of seedling bulbous *Calanthes* from the garden of Sir Trevor Lawrence, who has devoted much attention to these plants and has raised some interesting hybrids. About twenty kinds were shown, ranging in color from pure white to deep crimson. The only one selected for a first-class certificate was *C. sanguinaria*, with flowers similar in size and shape to those of *C. Veitchii*, but of an intensely deep crimson. It is the finest yet raised, surpassing *C. Sedeni*, hitherto unequalled for richness of color. The pick of all these seedlings would be *C. sanguinaria*, *C. Veitchii splendens*, *C. lactea*, *C. nivea*, and *C. porphyrea*. The adjectives well describe the different tints of each, and they will be universally popular when once they find their way into commerce.

*Cypripedium Leeanum maculatum*, also shown by Sir Trevor Lawrence, is a novelty of sterling merit. The original *C. Leeanum*, which is a cross between *C. Spicerianum* and *C. insigne Maulei*, is very handsome, but this variety eclipses it; the dorsal sepal of the flower being quite two and one-half inches broad, almost entirely white, heavily and copiously spotted with purple. It surpasses also *C. Leeanum superbum*, which commands such high prices. I saw a small plant sold at auction lately for fifteen guineas and the nursery price is much higher.

*Lælia anceps Schröderæ* is the latest addition to the now very numerous list of varieties of the popular *L. anceps*. This new form, to which the committee with one accord gave a first class certificate, surpasses in my opinion all the colored varieties, with the possible exception of the true old Barkeri. The flowers are of the average size and ordinary form. The sepals are rose pink, the broad sepals very light, almost white in fact, while the labellum is of the deepest and richest velvety crimson imaginable. The golden tipped crest is a veritable beauty spot, and the pale petals act like a foil to show off the splendor of the lip.

Two new Ferns of much promise received first class certificates. One named *Pteris Claphamensis* is a chance seedling and was found growing among a lot of other sporelings in the garden of a London amateur. As it partakes of the characters of both *P. tremula* and *P. serrulata*, old and well known ferns, it is supposed to be a natural cross between these. The new plant is of tufted growth, with a dense mass of fronds about six inches long elegantly cut and gracefully recurved on all sides of the petiole. It is looked upon by specialists as just the sort of plant that will take in the market. The other certificated fern *Adiantum Regina*, is a good deal like *A. Victoria* and is supposed to be a sport from it. But *A. Regina*, while it has broad pinnæ of a rich emerald green like *A. Victoria*, has fronds from nine to twelve inches long, giving it a lighter and more elegant appearance. I don't know that the *Victoria Maidenhair* is grown in America yet, but I am sure those who do floral decorating will welcome it as well as the newer *A. Regina*. A third Maidenhair of a similar character is *A. rhodophyllum* and these form a trio that will become the standard

kinds for decorating. The young fronds of all three are of a beautiful coppery red tint, the contrast of which with the emerald green of the mature fronds is quite charming. They are warm green-house ferns and of easy culture, and are supposed to be hybrid forms of the old *A. scutum*.

*Nerine Mansellii*, a new variety of the Guernsey Lily, was one of the loveliest flowers at the show. From the common Guernsey Lily it differs only in color of the flowers. These have crimped-edged petals of clear rose tints, and the umbel of flowers is fully six inches across, borne on a stalk eighteen inches high. These Guernsey Lilies have of recent years come into prominence in English gardens since so many beautiful varieties have been raised, and as they flower from September onward to Christmas they are found to be indispensable for the green-house, and indoor decoration. The old *N. Fothergillii major*, with vivid scarlet-crimson flowers and crystalline cells in the petals which sparkle in the sunlight like myriads of tiny rubies, remains a favorite among amateurs. Baron Schroeder, who has the finest collection in Europe, grows this one only in quantity. An entire house is filled with them, and when hundreds of spikes are in bloom at once, the display is singularly brilliant.

A New Vegetable, a Japanese plant called Choro-Gi, belonging to the Sage family, was exhibited. Its botanical name is *Stachys tuberifera* and it was introduced first to Europe by the Vilmorins of Paris under the name of *Crosnes du Japon*. The edible part of the plant is the tubers, which are produced in abundance on the tips of the wiry fibrous roots. These are one and a half inches long, pointed at both ends, and have prominent raised rings. When washed they are as white as celery and when eaten raw taste somewhat like Jerusalem artichokes, but when cooked are quite soft and possess the distinct flavor of boiled chestnuts. A dish of these tubers when cooked look like a mass of large caterpillars, but the Committee pronounced them excellent, and no doubt this vegetable will now receive attention from some of our enterprising seedsmen and may become a fashionable vegetable because new and unlike any common kind. The tubers were shown now for the first time in this country by Sir Henry Thompson, the eminent surgeon. The plant is herbaceous, dying down annually leaving the tubers, which multiply very rapidly. They can be dug at any time of the year, which is an advantage. The plant is perfectly hardy here and would no doubt be so in the United States, as it remains underground in winter. [A figure of this plant with the tubers appeared in the *Gardener's Chronicle*, January 7th, 1888.—ED.]

*Phalænopsis F. L. Ames*, a hybrid moth orchid, the result of intercrossing *P. grandiflora* of Lindley with *P. intermedia Portei* (itself a natural hybrid between the little *P. rosea* and *P. amabilis*), was shown at a later exhibition. The new hybrid is very beautiful. It has the same purplish green leaves as *P. amabilis*, but much narrower. The flower spikes are produced in the same way as those of *P. grandiflora*, and the flowers in form and size resemble those of that species, but the coloring of the labellum is more like that of its other parent. The sepals and petals are pure white, the latter being broadest at the lips. The labellum resembles that of *P. intermedia*, being three-lobed, the lateral lobes are erect, magenta purple in color and freckled. The middle or triangular lobe is of the same color as the lateral lobes, but pencilled with longitudinal lines of crimson, flushed with orange, and with the terminal cirrhi of a clear magenta. The column is pink, and the crest is adorned with rosy speckles. The Floral Committee unanimously awarded a first-class certificate of merit to the plant.

A New *Lælia* named *L. Gouldiana* has had an eventful history. The representative of Messrs. Sander, of St. Albans, the great orchid importers, while traveling in America saw it blooming in New York, in the collection of Messrs. Siebrecht & Wadley, and noting its distinctness and beauty bought the stock of it. The same week another new *Lælia* flowered in England and was sent up to one of the London auction rooms for sale. As it so answered the description of the American novelty which Messrs. Sander had just secured it was bought for the St. Albans collection, and now it turns out that the English novelty and the American novelty are one and the same thing, and a comparison of dates shows that they flowered on the same day, although in different hemispheres. As, however, it was first discovered in the United States, it is intended to call it an American orchid, and that is why Mr. Jay Gould has his name attached to it. In bulb and leaf the novelty closely resembles *L. albida*, and in flower both *L. anceps* and *L. autumnalis*. The flowers are as large as those of an average form of *L. anceps*, the sepals are rather narrow, the petals as broad as those of *L.*

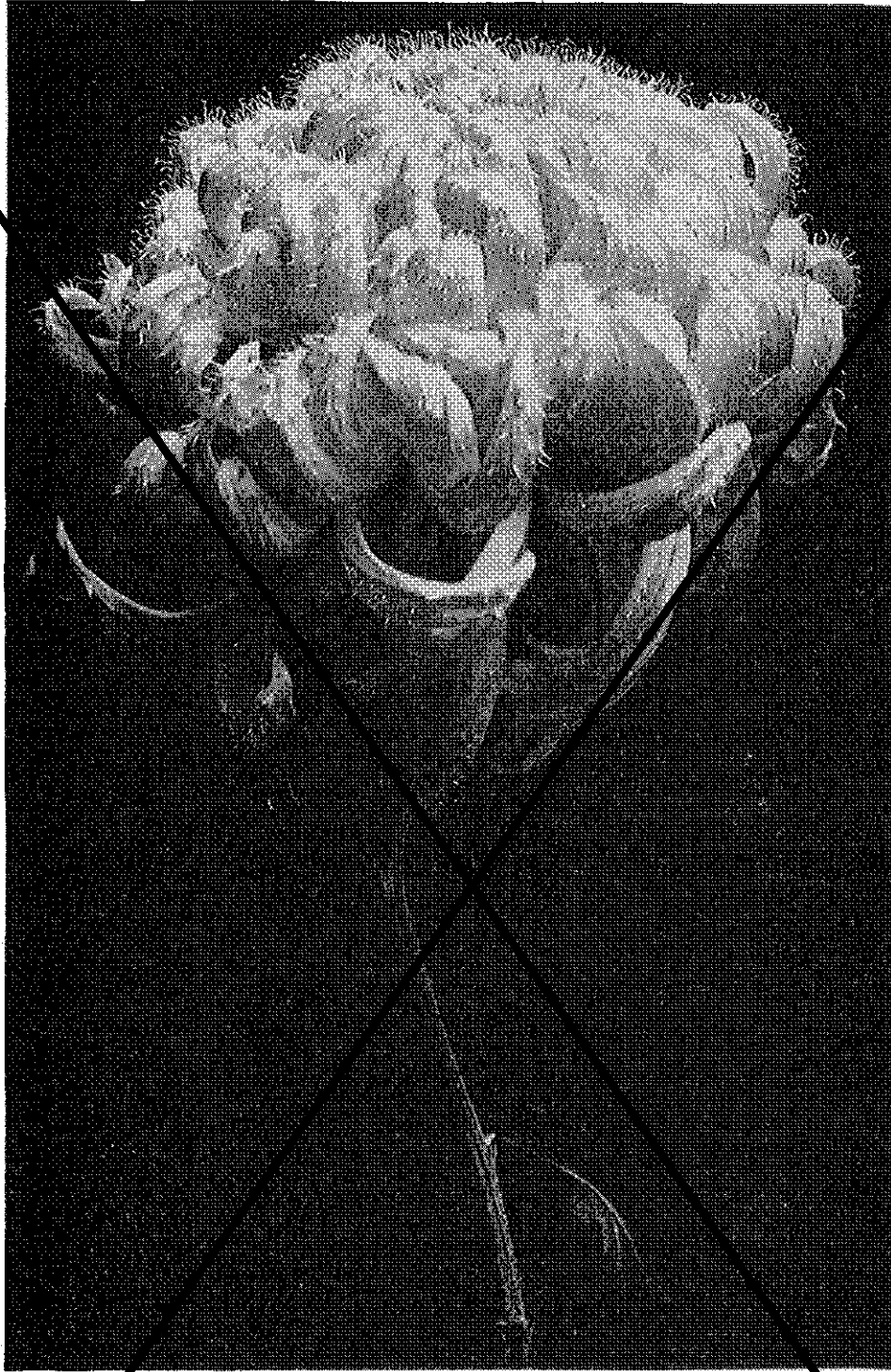


Fig. 1.—Chrysanthemum—Mrs. Alpheus Hardy.

*anceps Dawsoni*, and both petals and sepals are of a deep rose pink, intensified at the tips as if the color had collected there and was dripping out. The tip is in form between that of *L. anceps* and *L. autumnalis* and has the prominent ridges of the latter, while the color is a rich purple crimson. The black viscid pubescence always seen on the ovary of *L. autumnalis*, is present on that of *L. Gouldiana*. The plants I saw in the orchid nursery at St. Albans lately, bore several spikes, some having three or four flowers. Those who have seen it are puzzled about its origin, some considering it a hybrid between *L. anceps* and *L. autumnalis*, others consider it a distinct species and to the latter opinion I am inclined. Whatever its origin may be, it is certain we have a charming addition to midwinter flowering orchids.

W. Goldring.

London, February 1st.

#### A New Departure in Chrysanthemums.

THE Chrysanthemum of which the figure gives a good representation is one of a collection of some thirty varieties lately sent from Japan to the lady for whom it has been named, Mrs. Alpheus Hardy of Boston, by a young Japanese once a protégé of hers, but now returned as a teacher to his native country. As may be seen, it is quite distinct from any variety known in this country or Europe, and the Japanese botanist Miyabe, who saw it at Cambridge, pronounces it a radical departure from any with which he is acquainted.

The photograph from which the engraving was made was taken just as the petals had begun to fall back from the centre, showing to good advantage the peculiarities of the variety.

The flower is of pure white, with the firm, long and broad petals strongly incurved at the extremities. Upon the back of



outer surface of this incurved portion will be found, in the form of quite prominent hairs, the peculiarity which makes this variety unique.

These hairs upon close examination are found to be a glandular outgrowth of the epidermis of the petals, multicellular in structure and with a minute drop of a yellow resinous substance at the tip. The cells at first conform to the wavy character of those of the epidermis, but gradually become prismatic with straight walls, as shown in the engraving of one of the hairs, which was made from a drawing furnished by Miss Grace Cooley, of the Department of Botany at Wellesley College, who made a microscopic investigation of them.

This is one of those surprises that occasionally make their appearance from Japan. Possibly it is a chance seedling; but since one or two other specimens in the collection are striking in form, and others are distinguished for depth and purity of color, it is more probable that the best of them have been developed by careful selection.

This *Chrysanthemum* was exhibited at the Boston Chrysanthemum Show last December by Edwin Fewkes & Son of Newton Highlands, Mass.

A. H. Fewkes.

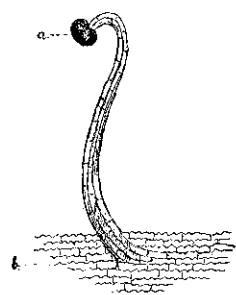


Fig. 2.—Hair from Petal of *Chrysanthemum*, much enlarged.  
a—resin drop. b—epidermis of petal with wavy cells.

### New Plants from Afghanistan.

**Arnebia cornuta.**—This is a charming novelty, an annual, native of Afghanistan. The little seedling with lance-like hairy, dark green leaves, becomes presently a widely branching plant two feet in diameter and one and one-half feet high. Each branch and branchlet is terminated by a lengthening raceme of flowers. These are in form somewhat like those of an autumnal Phlox, of a beautiful deep golden yellow color, adorned and brightened up by five velvety black blotches. These blotches soon become coffee brown and lose more and more their color, until after three days they have entirely disappeared. During several months the plant is very showy, the fading flowers being constantly replaced by fresh expanding ones. Sown in April in the open border, it needs no care but to be thinned out and kept free from weeds. It must, however, have some soil which does not contain fresh manure.

**Delphinium Zalil.**—This, also, is a native of Afghanistan, but its character, whether a biennial or perennial, is not yet ascertained. The Afghans call it Zalil and the plant or root is used for dyeing purposes. Some years ago we only knew blue, white and purple larkspurs, and then California added two species with scarlet flowers. The above is of a beautiful sulphur yellow, and, all in all, it is a plant of remarkable beauty. From a rosette of much and deeply divided leaves, rises a branched flower stem to about two feet; each branch and branchlet ending in a beautiful spike of flowers each of about an inch across and the whole spike showing all its flowers open at once. It is likely to become a first rate standard plant of our gardens. To have it in flower the very first year it must be sown very early, say in January, in seed pans, and transplanted later, when it will flower from the end of May until the end of July. Moreover, it can be sown during spring and summer in the open air to flower the following year. It is quite hardy here.

Baden-Baden.

Max Leichtlin.

### *Iris tenuis*.\*

THIS pretty delicate species of *Iris*, Fig. 3, is a native of the Cascade Mountains of Northern Oregon. Its long branching rootstocks are scarcely more than a line in thickness, sending up sterile leafy shoots and slender stems about a foot high. The leaves are thin and pale green, rather taller than the stems, sword-shaped and half an inch broad or more. The leaves of the stem are bract-like and distant, the upper one or two subtending slender peduncles. The spathes are short, very thin

I. *tenuis*, Watson, *Proc. Amer. Acad.*, xvii. 380. Rootstock elongated, very slender (a line thick); leaves thin, ensiform, about equalling the stems, four to eight lines broad; stems scarcely a foot high, 2-3-flowered, with two or three bract-like leaves two or three inches long; lateral peduncles very slender, as long as the bracts; spathes scarious, an inch long; pedicels solitary, very short; flowers small, white marked with yellow and purple; tube two or three lines long; segments oblong-spatulate, the sepals spreading, one and one-half inches long, the petals shorter and emarginate; anthers as long as the filaments; styles with narrow entire crests; capsule oblong-ovate, obtuse, nine lines long.

and scarious, and enclose the bases of their rather small solitary flowers, which are "white, lightly striped and blotched with yellow and purple." The sepals and petals are oblong-spatulate, from a short tube, the sepals spreading, the shorter petals erect and notched.

The peculiar habitat of this species doubtless accounts in good measure for its slender habit and mode of growth. Mr. L. F. Henderson, of Portland, Oregon, who discovered it in 1881, near a branch of the Clackamas River called Eagle Creek, about thirty miles from Portland, reports it as growing in the fir forests in broad mats, its very long rootstocks running along near the surface of the ground, just covered by moss or partly decayed fir-needles, with a light addition of soil. This also would indicate the need of special care and treatment in its cultivation. In May, 1884, Mr. Henderson took great pains to procure roots for the Botanic Garden at Cambridge, which were received in good order, but which did not survive the next winter. If taken up, however, later in the season or very early in the spring, it is probable that with due attention to soil and shade there would be little trouble in cultivating it successfully. The accompanying figure is from a drawing by Mr. C. E. Faxon.

Sereno Watson.

### Hardy Shrubs for Forcing.

SHRUBS for forcing should consist of early blooming kinds only. The plants should be stocky, young and healthy, well-budded and well-ripened, and in order to have first-class stock they should be grown expressly for forcing. For cut flower purposes only, we can lift large plants of Lilacs, Snowballs, Deutzias, Mock oranges and the like with all the ball of roots we can get to them and plant at once in forcing-houses. But this should not be done before New Year's. We should prepare for smaller plants some months ahead of forcing time, say in the preceding April or August, by lifting them and planting in small pots, tubs or boxes as can conveniently contain their roots, and we should encourage them to root well before winter sets in. Keep them out of doors and plunged till after the leaves drop off; then either mulch them where they are or bring them into a pit, shed or cool cellar, where there shall be no fear of their getting dry, or of having the roots fastened in by frost. Introduce them into the green-house in succession; into a cool green-house at first for a few weeks, then as they begin to start, into a warmer one. From the time they are brought into the green-house till the flowers begin to open give a sprinkling overhead twice a day with tepid water. When they have done blooming, if worth keeping over for another time, remove them to a cool house and thus gradually harden them off, then plant them out in the garden in May, and give them two years' rest.

Shrubs to be forced for their cut flowers only should consist of such kinds as have flowers that look well and keep well after being cut. Among these are *Deutzia gracilis*, common Lilacs of various colors, *Staphylea Colchica*, *Spiraea Cantonensis* (Reevesii), single and double, the Guelder Rose, the Japanese Snowball and *Abelia mollis*. To these may be added some of the lovely double-flowering and Chinese apples, whose snowy or crimson-tinted buds and leafy twigs are very pretty. The several double-flowered forms of *Prunus triloba* are also desirable, but a healthy stock is hard to get. *Andromeda floribunda* and *A. japonica* set their flower buds the previous summer for the next year's flowers, and are, therefore, like the Laurestinus, easily forced into bloom after New Year's. Hardy and half-hardy Rhododendrons with very little forcing may be had in bloom from March.

In addition to the above, for conservatory decoration we may introduce all manner of hardy shrubs. Double flowering peach and cherry trees are easily forced and showy while they last. Clumps of *Pyrus arbutifolia* can easily be had in bloom in March, when their abundance of deep green leaves is an additional charm to their profusion of hawthorn-like flowers. The Chinese *Xanthoceras* is extremely copious and showy, but of brief duration and ill-fitted for cutting. Bushes of yellow Broom and double-flowering golden Furze can easily be had after January. *Fasminum nudiflorum* may be had in bloom from November till April, and Forsythia from January. They look well when trained up to pillars. The early-flowering Clematises may be used to capital advantage in the same way, from February onward. Although the Malonias flower well, their foliage at blooming time is not always comely. Out-of-doors the American Red-bud makes a handsomer tree than does the Japanese one; but the latter is preferable for green-house work, as the flowers are bright and the smallest plants bloom. The Chinese Wistaria blooms as well in the

green-house as it does outside; indeed, if we introduce some branches of an out-door plant into the green-house, we can have it in bloom two months ahead of the balance of the vine still left out-of-doors. Hereabout we grow Wistarias as standards, and they bloom magnificently. What a sight a big standard wistaria in the green-house in February would be! Among other shrubs may be mentioned Shadbush, African Tamarix, Daphne of sorts and Exochorda. We have also a good many barely hardy plants that may be wintered well in a cellar or cold pit, and forced into bloom in early spring. Among these are Japanese Privet, Pittosporum, Raphiolepis, Hydrangeas and the like.

And for conservatory decoration we can also use with excellent advantage some of our fine-leaved shrubs, for instance our lovely Japanese Maples and variegated Box Elder.

Glen Cove, N. Y. Wm. Falconer.

### Plant Notes.

**A Half-hardy Begonia.**—When botanizing last September upon the Cordilleras of North Mexico some two hundred miles south of the United States Boundary, I found growing in black mould of shaded ledges—even in the thin humus of mossy rocks—at an elevation of 7,000 to 8,000 feet, a plant of striking beauty, which Mr. Sereno Watson identifies as *Begonia gracilis*, HBK., var. *Martiana*, A. DC. From a small tuberous root it sends up to a height of one to two feet a single crimson-tinted stem, which terminates in a long raceme of scarlet flowers, large for the genus and long enduring. The plant is still further embellished by clusters of scarlet gemmæ in the axils of its leaves. Mr. Watson writes: "It was in cultivation fifty years and more ago, but has probably been long ago lost. It appears to be the most northern species of the genus, and should be the most hardy." Certainly the earth freezes and snows fall in the high region, where it is at home.

### Northern Limit of the Dahlia.

In the same district, and at the same elevation, I met with a purple flowered variety of *Dahlia coccinea*, Cav. It was growing in patches under oaks and pines in thin dry soil of summits of hills. In such exposed situations the roots must be subjected to some frost, as much certainly as under a light covering of leaves in a northern garden. The Dahlia has not before been reported, as I believe, from a latitude nearly so high. C. G. Pringle.

*Ceanothus* is a North American genus, represented in the Eastern States by New Jersey Tea, and Red Root (*C. Americanus* and *C. ovatus*), and in the

West and South-west by some thirty additional species. Several of these Pacific Coast species are quite handsome and well worthy of cultivation where they will thrive. Some of the more interesting of them are figured in different volumes of the *Botanical Magazine*, from plants grown at Kew, and I believe that the genus is held in considerable repute by French gardeners.

In a collection of plants made in Southern Oregon, last spring, by Mr. Thomas Howell, several specimens of *Ceanothus* occur, which are pretty clearly hybrids between *C. cuneatus* and *C. prostratus*, two common species of the region. Some have the spreading habit of the latter, their flowers are of the bright blue color characteristic of that species, and borne on slender blue pedicels, in an umbel-like cluster. But while many of their leaves have the abrupt three-toothed apex of *C. prostratus*, all gradations can be found from this form to the spatulate, toothless leaves of *C. cuneatus*. Other specimens have the more rigid habit of the latter species, and their flowers are white or nearly so, on shorter pale pedicels, in usually smaller and denser clusters. On these plants the leaves are commonly those of *C. cuneatus*, but they pass into the truncated and toothed form proper to *C. prostratus*.

According to Focke (*Pflanzenmischlinge*, 1881, p. 99), the French cross one or more of the blue-flowered Pacific Coast species on the hardier New Jersey Tea, a practice that may perhaps be worthy of trial by American gardeners. Have any of the readers of GARDEN AND FOREST ever met with spontaneous hybrids?

W. Trelease.

### Wire Netting for Tree Guards.

—On some of the street trees of Washington heavy galvanized wire netting is used to protect the bark from injury by horses. It is the same material that is used for enclosing poultry yards. It comes in strips five or six feet wide, and may be cut to any length required by the size of the tree. The edges are held in place by bending together the cut ends of the wires, and the whole is sustained by staples over the heavy wires at the top and bottom. This guard appears to be an effective protection and is less unsightly than any other of which I know, in fact it can hardly be distinguished at the distance of a few rods. It is certainly an improvement on the plan of white-washing the trunks, which has been extensively practiced here since the old guards were removed. A. A. Crozier.

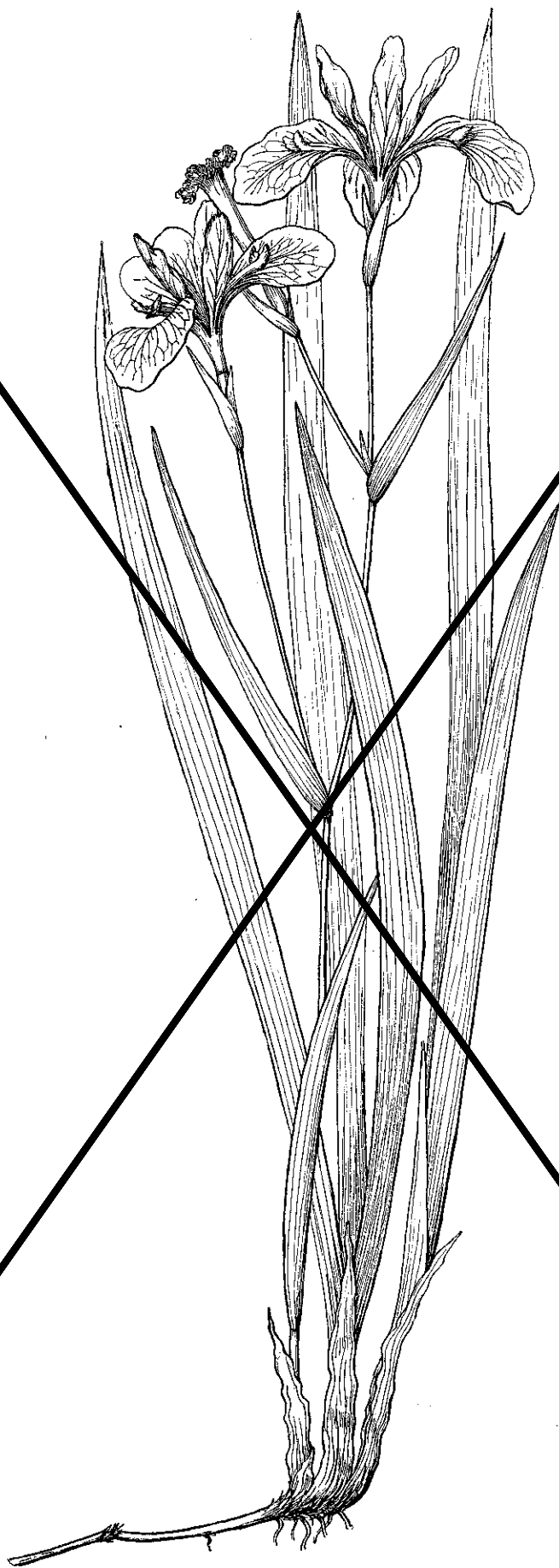


Fig. 3.—*Iris tenuis*.—See page 6.

### Artificial Water.

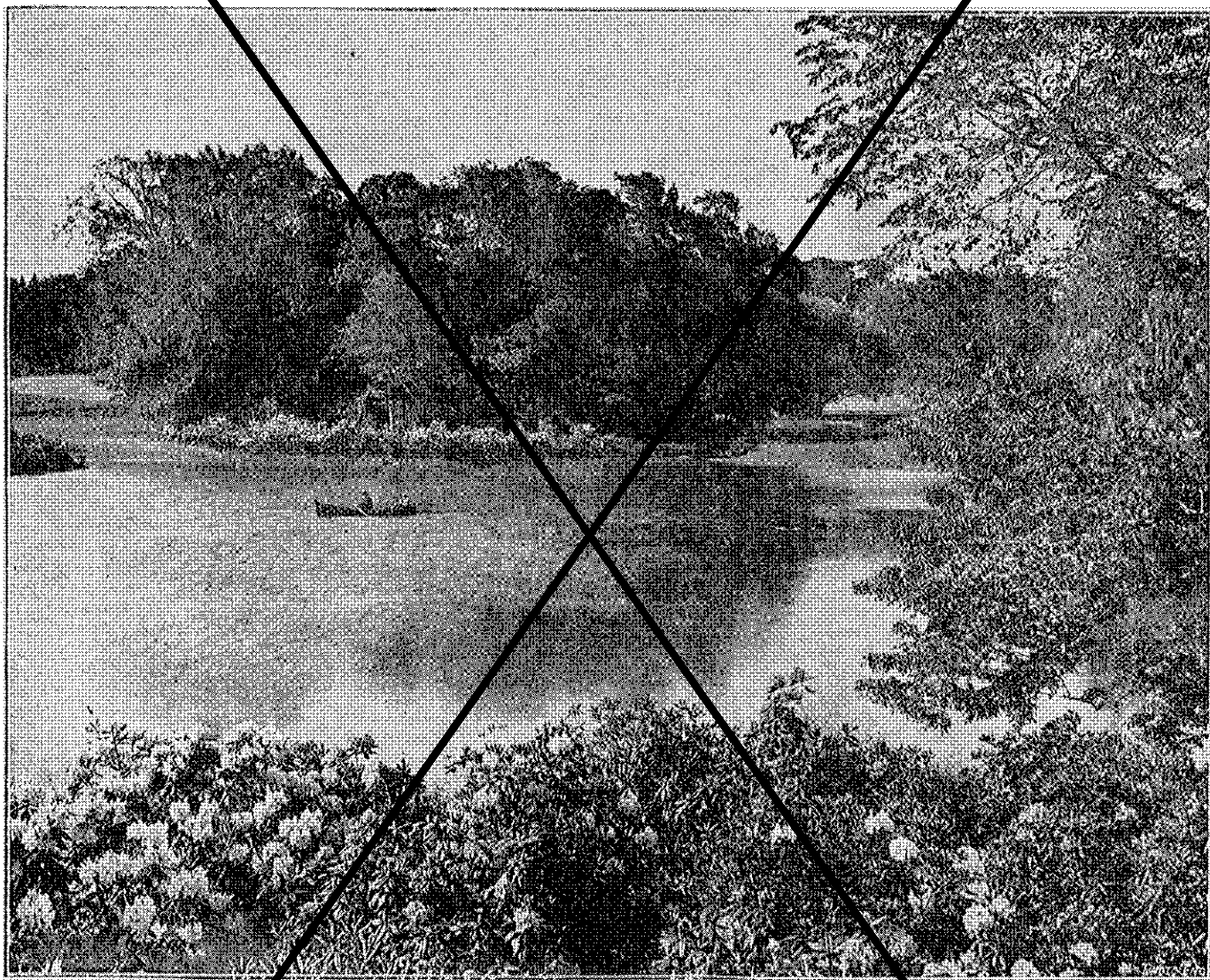
ONE of the most difficult parts of a landscape gardener's work is the treatment of what our grandfathers called "pieces of water" in scenes where a purely natural effect is desired. The task is especially hard when the stream, pond or lake has been artificially formed; for then Nature's processes must be simulated not only in the planting but in the shaping of the shores. Our illustration partially reveals a successful effort of this sort—a pond on a country-seat near Boston.

It was formed by excavating a piece of swamp and damming a small stream which flowed through it. In the distance towards the right the land lies low by the water and gradually rises as it recedes. Opposite us it forms little wooded promontories with grassy stretches between. Where we stand it is higher, and beyond the limits of the picture to the left it forms

suited to their place and in harmony with each other; and all the contours of the shore are gently modulated and softly connected with the water by luxuriant growths of water plants. The witness of the eye alone would persuade us that Nature unassisted had achieved the whole result. But beauty of so suave and perfect a sort as this is never a natural product. Nature's beauty is wilder if only because it includes traces of mutation and decay which here are carefully effaced. Nature suggests the ideal beauty, and the artist realizes it by faithfully working out her suggestions.

### Some New Roses.

THE following list comprises most of the newer Roses that have been on trial to any extent in and about Philadelphia during the present winter:



A Piece of Artificial Water.

a high, steep bank rising to the lawn, on the further side of which stands the house. The base of these elevated banks and the promontories opposite are planted with thick masses of rhododendrons, which flourish superbly in the moist, peaty soil, protected, as they are, from drying winds by the trees and high ground. Near the low meadow a long stretch of shore is occupied by thickets of hardy azaleas. Beautiful at all seasons, the pond is most beautiful in June, when the rhododendrons are ablaze with crimson and purple and white, and when the yellow of the azalea-beds—discreetly separated from the rhododendrons by a great clump of low-growing willows—finds delicate continuation in the buttercups which fringe the daisied meadow. The lifted banks then afford particularly fortunate points of view; for as we look down upon the rhododendrons, we see the opposite shore and the water with its rich reflected colors as over the edge of a splendid frame. No amount of artificiality disturbs the eye despite the unwonted profusion of bloom and variety of color. All the plants are

**Puritan (H. T.)** is one of Mr. Henry Bennett's seedlings, and perhaps excites more interest than any other. It is a cross between Mabel Morrison and Devoniensis, creamy white in color and a perpetual bloomer. Its flowers have not opened satisfactorily this winter. The general opinion seems to be that it requires more heat than is needed for other forcing varieties. Further trial will be required to establish its merit.

**Meteor (H. T., Bennett.)**—Some cultivators will not agree with me in classing this among hybrid Teas. In its manner of growth it resembles some Tea Roses, but its coloring and scanty production of buds in winter are indications that there is Hybrid Remontant blood in it. It retains its crimson color after being cut longer than any Rose we have, and rarely shows a tendency to become purple with age, as other varieties of this color are apt to do. For summer blooming under glass it will prove satisfactory. In winter its coloring is a rich velvety crimson, but as the sun gets stronger it assumes a more lively shade.

**Mrs. John Laing (H. R., Bennett),** is a seedling from Francois Michelon, which it somewhat resembles in habit of growth and color of flower. It is a free bloomer out-of-doors in summer and forces readily in winter. Blooms of it have been offered for sale in the stores here since the first week in December. It is a soft shade of pink in color, with a delicate lilac tint. It promises to become a general favorite, as in addition to the qualities referred to, it is a free autumnal bloomer outside. For forcing it will be tried extensively next winter.

**Princess Beatrice (T., Bennett),** was distributed for the first time in this country last autumn, but has so far been a disappointment in this city. But some lots arrived from Europe too late and misfortunes befell others, so that the trial can hardly be counted decisive, and we should not hastily condemn it. Some have admired it for its resemblance, in form of flower, to a Madame Cusin, but its color is not just what we need. In shade it somewhat resembles Sunset, but is not so effective. It may, however, improve under cultivation, as some other Roses have done, so far as I know it has not been tried out-of-doors.

**Papa Gontier (H. B., Nabonnaud),**—This, though not properly a new rose, is on trial for the first time in this city. It has become a great favorite with growers, retailers and purchasers. In habit it is robust and free blooming, and in coloring, though similar to Bon Silene, is much deeper or darker. There seems to be a doubt in some quarters as to whether it blooms as freely as Bon Silene; personally, I think there is not much difference between the two. Gontier is a good Rose for out-door planting.

Edwin Lonsdale.

### Two Ferns and their Treatment.

**Adiantum Farleyense.**—This beautiful Maidenhair is supposed to be a subfertile, plumose form of *A. tenerum*, which much resembles it, especially in a young state. For decorative purposes it is almost unrivaled, whether used in pots or for trimming baskets of flowers or bouquets. It prefers a warm, moist house and delights in abundant water. We find it does best when potted firmly in a compost of two parts loam to one of peat, and with a good sprinkling of sifted coalashes. In this compost it grows very strong, the fronds attaining a deeper green and lasting longer than when grown in peat. When the pots are filled with roots give weak liquid manure occasionally. This fern is propagated by dividing the roots and potting in small pots, which should be placed in the warmest house, where they soon make fine plants. Where it is grown expressly for cut fronds the best plan is to plant it out on a bench in about six inches of soil, taking care to give it plenty of water and heat, and it will grow like a weed.

**Actinopteris radiata.**—A charming little fern standing in a genus by itself. In form it resembles a miniature fan palm, growing about six inches in height. It is generally distributed throughout the East Indies. In cultivation it is generally looked upon as poor grower, but with us it grows as freely as any fern we have. We grow a lot to mix in with Orchids, as they do not crowd at all. We pot in a compost of equal parts loam and peat with a few ashes to keep it open, and grow in the warmest house, giving at all times abundance of water both at root and overhead. It grows very freely from spores, and will make good specimens in less than a year. It is an excellent Fern for small baskets.

F. Goldring.

### Timely Hints About Bulbs.

**SPRING** flowering bulbs in-doors, such as the Dutch Hyacinths, Tulips and the many varieties of Narcissus, should now be coming rapidly into bloom. Some care is required to get well developed specimens. When first brought in from cold frames or wherever they have been stored to make roots, do not expose them either to direct sunlight or excessive heat.

A temperature of not more than fifty-five degrees at night is warm enough for the first ten days, and afterwards, if they show signs of vigorous growth and are required for any particular occasion, they may be kept ten degrees warmer. It is more important that they be not exposed to too much light than to too much heat.

Half the short stemmed Tulips, dumpy Hyacinths and blind Narcissus we see in the green-houses and windows of amateurs are the result of excessive light when first brought into warm quarters. Where it is not possible to shade bulbs without interfering with other plants a simple and effective plan is to make funnels of paper large enough to stand inside each pot and six inches high. These may be left on the pots night and day from the time the plants are brought in until the flower spike has grown above the foliage; indeed, some of the very finest Hyacinths cannot be had in perfection without some

such treatment. Bulbous plants should never suffer for water when growing rapidly, yet on the other hand, they are easily ruined if allowed to become sodden.

When in flower a rather dry and cool temperature will preserve them the longest.

Of bulbs which flower in the summer and fall, Gloxinias and tuberous rooted Begonias are great favorites and easily managed. For early summer a few of each should be started at once—using sandy, friable soil. Six-inch pots, well drained, are large enough for the very largest bulbs, while for smaller even three-inch pots will answer. In a green-house there is no difficulty in finding just the place to start them. It must be snug, rather shady and not too warm. They can be well cared for, however, in a hot-bed or even a window, but some experience is necessary to make a success.

Lilies, in pots, whether *L. candidum* or *L. longiflorum* that are desired to be in flower by Easter, should now receive every attention—their condition should be that the flower buds can be easily felt in the leaf heads. A temperature of fifty-five to sixty-five at night should be maintained, giving abundance of air on bright sunny days to keep them stocky. Green fly is very troublesome at this stage, and nothing is more certain to destroy this pest than to dip the plants in tobacco water which, to be effective, should be the color of strong tea. Occasional waterings of weak liquid manure will be of considerable help if the pots are full of roots.

J. Thorpe.

### Entomology.

#### Arsenical Poisons in the Orchard.

**AS** is well known, about fifty per cent. of the possible apple crop in the Western States is sacrificed each year to the codling moth except in sections where orchardists combine to apply bands of straw around the trunks. But as is equally well known this is rather a troublesome remedy. At all events, in Illinois, Professor Forbes, in a bulletin lately issued from the office of the State Entomologist of Illinois, claims that the farmers of that State suffer an annual loss from the attacks of this single kind of insect of some two and three-quarters millions of dollars.

As the results of two years' experiments in spraying the trees with a solution of Paris green, only once or twice in early spring, before the young apples had drooped upon their stems, there was a saving of about seventy-five per cent. of the apples.

The Paris green mixture consisted of three-fourths of an ounce of the powder by weight, of a strength to contain 15.4 per cent. of metallic arsenic, simply stirred up in two and a half gallons of water. The tree was thoroughly sprayed with a hand force pump, and with the deflector spray and solid jet-hose nozzle, manufactured in Lowell, Mass. The fluid was thrown in a fine mist-like spray, applied until the leaves began to drip.

The trees were sprayed in May and early in June while the apples were still very small. It seems to be of little use to employ this remedy later in the season, when later broods of the moth appear, since the poison takes effect only in case it reaches the surface of the apple between the lobes of the calyx, and it can only reach this place when the apple is very small and stands upright on its stem. It should be added that spraying "after the apples have begun to hang downward is unquestionably dangerous, since even heavy winds and violent rains are not sufficient to remove the poison from the fruit at this season.

At the New York Experimental Station last year a certain number of trees were sprayed three times with Paris green with the result that sixty-nine per cent. of the apples were saved.

It also seems that last year about half the damage that might have been done by the Plum weevil or *Cerculus* was prevented by the use of Paris green, which should be sprayed on the trees both early in the season, while the fruit is small, as well as later.

The cost of this Paris green application, when made on a large scale, with suitable apparatus, only once or twice a year, must, says Mr. Forbes, fall below an average of ten cents a tree.

The use of solutions of Paris green or of London purple in water, applied by spraying machines such as were invented and described in the reports of the national Department of Agriculture by the U. S. Entomologist and his assistants, have effected a revolution in remedies against orchard and forest insects. We expect to see them, in careful hands, tried with equal success in shrubberies, lawns and flower gardens.

A. S. Packard.



## The Forest.

### The White Pine in Europe.

THE White Pine was among the very first American trees which came to Europe, being planted in the year 1705 by Lord Weymouth on his grounds in Chelsea. From that date, the tree has been cultivated in Europe under the name of Weymouth Pine; in some mountain districts of northern Bavaria, where it has become a real forest tree, it is called Strobe, after the Latin name *Pinus strobus*. After general cultivation as an ornamental tree in parks this Pine began to be used in the forests on account of its hardiness and rapid growth, and it is now not only scattered through most of the forests of Europe, but covers in Germany alone an area of some 300 acres in a dense, pure forest. Some of these are groves 120 years old, and they yield a large proportion of the seed demanded by the increasing cultivation of the tree in Europe.

The White Pine has proved so valuable as a forest tree that it has partly overcome the prejudices which every foreign tree has to fight against. The tree is perfectly hardy, is not injured by long and severe freezing in winter, nor by untimely frosts in spring or autumn, which sometimes do great harm to native trees in Europe. On account of the softness of the leaves and the bark, it is much damaged by the nibbling of deer, but it heals quickly and throws up a new leader.

The young plant can endure being partly shaded by other trees far better than any other Pine tree, and even seems to enjoy being closely surrounded, a quality that makes it valuable for filling up in young forests where the native trees, on account of their slow growth, could not be brought up at all.

The White Pine is not so easily broken by heavy snow-fall as the Scotch Pine, on account of the greater elasticity of its wood. The great abundance of soft needles falling from it every year better fits it for improving a worn-out soil than any European Pine, therefore the tree has been tried with success as a nurse for the ground in forest plantations of Oak, when the latter begin to be thinned out by nature, and grass is growing underneath them.

And finally, all observations agree that the White Pine is a faster growing tree than any native Conifer in Europe, except, perhaps, the Larch. The exact facts about that point, taken from investigations on good soil in various parts of Germany, are as follows:

Years.	Height.	Annual Growth During Last Decade.
The White Pine at 20 reaches	7.5 meters.	37 centimeters
" 30 "	12.5 "	50 "
" 40 "	18.5 "	60 "
" 50 "	22.5 "	40 "
" 60 "	26.5 "	40 "
" 70 "	28.5 "	20 "
" 80 "	30.0 "	15 "
" 90 "	32.0 "	20 "

For comparison I add here the average growth on good soil, of the Scotch Pine, one of the most valuable and widely distributed timber trees of Europe.

Years.	Height.	Annual Growth During Last Decade.
The Scotch Pine at 20 reaches	7.3 meters.	36.5 centimeters
" 30 "	11.6 "	43.0 "
" 40 "	15.7 "	41.0 "
" 50 "	19.4 "	37.0 "
" 60 "	22.1 "	27.0 "
" 70 "	24.0 "	22.0 "
" 80 "	26.0 "	17.0 "
" 90 "	27.5 "	15.0 "
" 100 "	28.5 "	10.0 "
" 120 "	30.0 "	7.5 "

That is, the White Pine is ahead of its relative during its entire life and attains at 80 years a height which the Scotch Pine only reaches in 120 years. It appears then

that the whole volume of wood formed within a certain period by an acre of White Pine forest is greater than that yielded by a forest of Scotch Pine within the same period.

As far as reliable researches show, a forest of White Pine when seventy years old gives an annual increment of 3 cords of wood per acre. On the same area a forest of Scotch Pine increases every year by 2.4 cords on the best soil, 2 cords on medium soil, and 1.5 cords on poor soil.

But notwithstanding the splendid qualities which distinguish the White Pine as a forest tree its wood has never been looked upon with favor in Europe. Many of those who are cultivating the White Pine for business seem to expect that they will raise a heavy and durable wood. These are the qualities prized in their own timber trees, and they seem to think that the White Pine must be so highly prized at home for the same qualities, when in fact it is the lightness and softness of the wood which are considered in America. It would seem also that some European planters believe that a Pine tree exists which will yield more and at the same time heavier wood than any other tree on the same area. It is a general rule that the amount of woody substance annually formed on the same soil does not vary in any great degree with the different kinds of trees. For instance, if we have good soil we may raise 2,200 lbs. per acre of woody substance every year, from almost any kind of timber tree. If we plant a tree forming a wood of low specific gravity, we get a large volume of wood, and this is the case with the White Pine. If we plant on the same ground an Oak tree, we will get small volume of wood, but the weight of the woody substance will be the same, that is, 2,200 pounds of absolutely dried wood per acre.

It is remarkable that there is hardly any difference in the specific gravity of the wood of the White Pine grown in Europe and in its native country. I collected in Central Wisconsin wood-sections of a tall tree and compared the specific gravity with the wood of a full-grown tree of White Pine from a Bavarian forest. The average specific gravity of the Bavarian tree was 38.3. The average specific gravity of the American tree was 38.9. In both trees the specific gravity slightly increased from the base to the top. Professor Sargent gives 38 as the result of his numerous and careful investigations.

I was much surprised that the thickness of the sap-wood varied much in favor of the Bavarian tree.

The sap-wood measured in thickness:

	Of the Bavarian tree.	Of the American tree.
At the base	2.7 centimeters	9 centimeters.
In the middle	.4 "	6 "
Within the crown	.3 "	4 "

I am inclined to believe that on account of the generally drier climate of America a greater amount of water, and, therefore, of water-conducting sap-wood, is necessary to keep the balance between the evaporation and transportation of the water. The wood of the White Pine is certainly better fitted for many purposes than any tree with which nature has provided Europe, and yet one can hardly expect it to easily overcome fixed habits and prejudices. It will devolve upon the more intelligent proprietors of wood-land in Europe to begin with the plantation of the White Pine on a large scale. No Conifer in Europe can be cultivated with so little care and risk as the White Pine; the frost does not injure the young plant, and the numerous insects invading the European trees during their whole life-time inflict but little harm. Subterranean parasites are thinning out the plantations to some extent, but in no dangerous way.

Tokio, Japan.

H. Mayr.

**Abies amabilis.**—Professor John Macoun detected this species during the past summer upon many of the mountains of Vancouver's Island where with *Tsuga Pattoniana* it is common above 3,000 feet over the sea level. The northern distribution of this species as well as some other British Columbia trees is still a matter of conjecture. It has not been noticed north of the Fraser River, but it is not improbable that *Abies amabilis* will be found to extend far to the north along some of the mountain ranges of the north-west coast.

## European Larch in Massachusetts.

IN 1876 the Trustees of the Massachusetts Society for the Promotion of Agriculture offered a premium for the best plantations of not less than five acres of European Larch. The conditions of the competition were that not less than 2,700 trees should be planted to the acre, and that only poor, worn-out land, or that unfit for agricultural purposes, be used in these plantations.

The prize was to be awarded at the end of ten years. The committee appointed to award the prize were C. S. Sargent and John Lowell. The ten years having expired, this Committee lately made the following report:

Mr. James Lawrence, of Groton, and Mr. J. D. W. French, of North Andover, made plantations during the spring of 1877 in competition for this prize. Mr. Lawrence, however, at the end of one year withdrew from the contest, and Mr. French is the only competitor. Your Committee have visited his plantation at different times during the past ten years, and have now made their final inspection. The plantation occupies a steep slope facing the south and covered with a thin coating of gravelly loam largely mixed towards the bottom of the hill with light sand. This field in 1877 was a fair sample of much of the hillside pasture land of the eastern part of the State. It had been early cleared, no doubt, of trees, and the light surface soil practically exhausted by cultivation. It was then used as a pasture, producing nothing but the scantiest growth of native Grasses and Sedges with a few stunted Pitch Pines. Land of this character has no value for tillage, and has practically little value for pasturage. Upon five acres of this land Mr. French planted fifteen thousand European Larch. The trees were one foot high, and were set in the sod four feet apart each way, except along the boundary of the field, where the plantation was made somewhat thicker. The cost of the plantation, as furnished by Mr. French, has been as follows:

15,000 Larch (imported), . . . . .	\$108 50
Fencing, . . . . .	20 81
Surveying, . . . . .	6 00
Labor, . . . . .	104 69
Total, . . . . .	\$240 00

This, with compound interest at five per cent. for ten years, makes the entire cost to date of the plantation of five acres, \$390.90.

The Trees for several years grew slowly and not very satisfactorily. Several lost their leaders, and in various parts of the plantation small blocks failed entirely. The trees, however, have greatly improved during the last four years, and the entire surface of the ground is now, with one or two insignificant exceptions, sufficiently covered. There appear to be from 10,000 to 12,000 larch trees now growing on the five acres. The largest tree measured is 25 feet high, with a trunk 26 inches in circumference at the ground. There are several specimens of this size at least, and it is believed that all the trees, including many which have not yet commenced to grow rapidly or which have been overcrowded and stunted by their more vigorous neighbors, will average 12 feet in height, with trunks 10 to 12 inches in circumference at the ground. Many individuals have increased over four feet in height during the present year. It is interesting to note as an indication of what Massachusetts soil of poor quality is capable of producing, that various native trees have appeared spontaneously in the plantation since animals were excluded from this field. Among these are White Pines 6 to 8 feet high, Pitch Pines 14 feet high, a White Oak 15 feet high and a Gray Birch 17 feet high. The Trustees offered this prize in the belief that it would cause a plantation to be made capable of demonstrating that unproductive lands in this State could be cheaply covered with trees, and the result of Mr. French's experiment seems to be conclusive in this respect. It has shown that the European Larch can be grown rapidly and cheaply in this climate upon very poor soil, but it seems to us to have failed to show that this tree has advantages for general economic planting in this State which are not possessed in an equal degree by some of our native trees. Land which will produce a crop of Larch will produce in the same time at least a crop of white pine. There can be no comparison in the value of these two trees in Massachusetts. The White Pine is more easily transplanted than the Larch, it grows with equal and perhaps greater rapidity, and it produces material for which there is an assured and increasing demand. The White Pine, moreover, has so far escaped serious attacks of insects and dangerous fungoid diseases which now threaten to

exterminate in different parts of Europe extensive plantations of Larch.

Your Committee find that Mr. French has complied with all the requirements of the competition; they recommend that the premium of one thousand dollars be paid to him.

## Answers to Correspondents.

When the woods are cut clean in Southern New Hampshire White Pine comes in very, very thickly. Is it best to thin out the growth or allow the trees to crowd and shade the feeble ones slowly to death?

J. D. L.

It is better to thin such over-crowded seedlings early, if serviceable timber is wanted in the shortest time. The statement that close growth is needed to produce long, clean timber, needs some limitation. No plant can develop satisfactorily without sufficient light, air and feeding room. When trees are too thickly crowded the vigor of every one is impaired, and the process of establishing supremacy of individuals is prolonged, to the detriment even of those which are ultimately victorious. The length is drawn out disproportionately to the diameter, and all the trees remain weak.

Experience has proved that plantations where space is given for proper growth in their earlier years, yield more and better wood than do Nature's dense sowings. Two records are added in confirmation of this statement, and many others could be given:

1. A pine plantation of twelve acres was made, one half by sowing, the other half by planting at proper distances. In twenty-four years the first section had yielded, including the material obtained in thinnings, 1,998 cubic feet, and the latter, 3,495 cubic feet of wood. The thinnings had been made, when appearing necessary, at ten, fifteen and eighteen years in the planted section, yielding altogether ten and three-quarter cords of round firewood and seven cords of brush; and at eight, ten and twenty years in the sowed section, with a yield of only three and one-fifth cords of round firewood at the last thinning and seven and four-fifths cords of brush wood.

2. A spruce growth seeded after thirty-three years was still so dense as to be impenetrable, with scarcely any increase, and the trees were covered with lichens. It was then thinned out when thirty-five, and again when forty-two years old. The appearance greatly improved, and the accretion in seven years after thinning showed 160 per cent. increase, or more than 26 per cent. every year.

The density of growth which will give the best results in all directions depends upon the kind of timber and soil conditions.

Washington, D. C.

—B. E. Fernow.

## Book Reviews.

## Gray's Elements of Botany.

FIFTY-ONE years ago, Asa Gray, then only twenty-six years of age, published a treatise on botany adapted to the use of schools and colleges. It was entitled "The Elements of Botany." Its method of arrangement was so admirably adapted to its purpose, and the treatment of all the subjects so mature and thorough, that the work served as a model for a large work which soon followed,—the well-known Botanical Text-book, and the same general plan has been followed in all the editions of the latter treatise. About twenty-five years after the appearance of the Elements, Dr. Gray prepared a more elementary work for the use of schools, since the Text-book had become rather too advanced and exhaustive for convenient use. This work was the "Lessons in Botany," a book which has been a great aid throughout the country, in introducing students to a knowledge of the principles of the science. Without referring to other educational works prepared by Dr. Gray, such as "How Plants Grow," etc., it suffices now to say that for two or three years, he had been convinced that there was need of a hand-book, different in essential particulars from any of its predecessors. When we remember that all of these had been very successful from an educational point of view, as well as from the more exacting one of the publishers, we can understand how strong must have been the motive which impelled the venerable but still active botanist to give a portion of his fast-flying time to the preparation of another elementary work. In answer to remonstrances from those who believed that the remnant of his days should be wholly given to the completion of the "Synoptical Flora," he was wont to say pleasantly, "Oh, I give only my evenings to the 'Elements.'" And, so, after a day's work, in which he had utilized every available moment of sunlight, he

would turn with the fresh alertness which has ever characterized every motion and every thought, to the preparation of what he called fondly, his "legacy" to young botanists. That precious legacy we have now before us.

In form it is much like the Lessons, but more compact and yet much more comprehensive. Its conciseness of expression is a study in itself. To give it the highest praise, it may be said to be French in its clearness and terseness. Not a word is wasted; hence, the author has been able to touch lightly and still with firmness every important line in this sketch of the principles of botany. This work, in the words of its author, "is intended to ground beginners in Structural Botany "and the principles of vegetable life, mainly as concerns Flowering or Phanerogamous plants, with which botanical instruction should always begin; also to be a companion and interpreter to the Manuals and Floras by which the student threads his flowery way to a clear knowledge of the surrounding vegetable creation. Such a book, like a grammar, "must needs abound in technical words, which thus arrayed "may seem formidable; nevertheless, if rightly apprehended, "this treatise should teach that the study of botany is not the "learning of names and terms, but the acquisition of knowledge and ideas. No effort should be made to commit technical terms to memory. Any term used in describing a "plant or explaining its structure can be looked up when it is "wanted, and that should suffice. On the other hand, plans "of structure, types, adaptations, and modifications, once understood, are not readily forgotten; and they give meaning "and interest to the technical terms used in explaining them."

The specific directions given for collecting plants, for preparing herbarium specimens, and for investigating the structure of plants make this treatise of great use to those who are obliged to study without a teacher. The very extensive glossary makes the work of value not only to this class of students, but to those, as well, whose pursuits are directed in our schools. The work fills, in short, the very place which Dr. Gray designed it should.

G. L. Goodale.

*The Kansas Forest Trees Identified by Leaves and Fruit*, by W. A. Kellerman, Ph.D., and Mrs. W. A. Kellerman (Manhattan, Kansas). This octavo pamphlet of only a dozen pages contains a convenient artificial key for the rapid determination of seventy-five species of trees. By the use of obvious characters the authors have made the work of identification comparatively easy in nearly every instance, and even in the few doubtful cases, the student will not be allowed to go far astray. The little hand-book ought to be found of use even beyond the limits of the State for which it was designed. G. L. Goodale.

## Public Works.

**The Falls of Minnehaha.**—A tract of fifty acres, beautifully located on the Mississippi, opposite the mouth of the Minnehaha, has been acquired by the City of St. Paul, and land will most probably be secured for a drive of several miles along the river. The bank here is more than 100 feet high, often precipitous, clothed with a rich growth of primeval forest, shrubbery and vines. It is hoped that Minneapolis may secure the land immediately opposite, including the Falls of Minnehaha and the valley of the stream to the great river. In this event a great park could be made between the two cities, easily reached from the best part of both, with the Mississippi flowing through it and the Falls as one of its features. This, in connection with the park so beautifully situated on Lake Como, three miles from St. Paul, and the neat parks of Minneapolis and its superbly kept system of lake shore drives, would soon be an object worthy of the civic pride of these enterprising and friendly rivals.

**A Park for Wilmington, Del.**—After many delays and defeats the people of this city have secured a tract of more than 100 acres, mostly of fine rocky woodland, with the classic Brandywine flowing through it, and all within the city limits, together with two smaller tracts, one a high wooded slope, the other lying on tide water, and both convenient to those parts of the city inhabited by workmen and their families. A topographical survey of these park lands is now in progress as preparation for a general plan of improvement. Of the "Brandywine Glen" Mr. Frederick Law Olmsted once wrote: "It is a passage of natural scenery which, to a larger city, would be of rare value—so rare and desirable that in a number of cities several million dollars have been willingly spent to obtain results of which the best that can be said is, that they somewhat distantly approach, in character and expression, such scenery as the people of Wilmington have provided for them without expense."

## Flower Market.

### Retail Prices in the Flower Market.

NEW YORK, February 23d.

There is a glut of flowers, particularly of tea roses of an indifferent quality. Bon Silene buds cost from 75 cts. to \$1 a dozen, Perle des Jardins, Niphetos, Souvenir d'un Ami, and Papa Gontiers bring \$1.50 a dozen. C. Mermets are very fine and from 30 to 35 cts. each. Not more than one in three La France roses is perfect; they bring from 25 cts. to 50 cts. each. Mde. Cuisin and Duke of Connaught are 25 cts. each, Bennets 20 cts. each and Brides 20 cts. each. American Beauties are \$1 to \$1.50 each, according to the location where they are sold. Puritans cost 75 cts. each, and Jacqueminots 50 cts. Magna Chartas are the most popular of the hybrid roses at present. They, Anna de Diesbach and Mad. Gabriel Luizet bring from \$1 to \$1.50 each.

Mignonette is very plentiful, well grown and of the spiral variety; it brings 75 cts. a dozen spikes retail, very large spikes bring as high as 15 cts. each. Hyacinths, Lilies-of-the-Valley and Tulips bring \$1 a dozen. Lilacs cost 25 cts. for a spray of one or two tassels. Violets are abundant, mostly of the Marie Louise variety, and bring \$2 a hundred. Fancy long stem red Carnations cost 75 cts. a dozen; short stem Carnations are 50 cts. a dozen; the dyed Carnations, named "Emerald," are in brisk demand and sell for 15 cts. each. Daffodils are \$1 a dozen; those dyed bring 20 cts. each. Finely grown Forget-me-not brought in small quantities to retail dealers sells for 10 cts. a spray. Calla Lilies bring \$2 and \$3 a dozen, and Longiflorum Lilies \$4 a dozen.

PHILADELPHIA, February 23d.

Heavy demands for flowers dropped off short on Ash Wednesday, and decreased each day until Saturday, when the regular orders for loose flowers caused the trade to pick up again. The demand for Orchids is steadily growing; a fair quantity is used at balls and parties, but nothing in comparison to Roses, Violets and Lily-of-the-Valley. Violets have been in greater demand, so far, than for several years. Large quantities of Tulips have been used recently for table decorations, especially the pink varieties, the favorite color for dinners and lunches. The American Beauty Rose, when cut with long stems, and really first class in every other respect, has been in great demand, at the best prices. Md. Gabrielle Luizet is scarce, the local growers not having commenced to cut in quantity; it is frequently asked for. Carnation plateaus in solid colors have been used freely. Lilacs are considered choice and have been in good demand. Retail prices rule as follows: Orchids, from 25 cts. to \$1 each; La France, Mermet, Bride and Bennet Roses, \$3 per dozen; Jacques, \$4 to \$5; American Beauty, \$4 to \$9; Puritan, \$4; Anna de Diesbach, \$5 to \$7.50; Papa Gontier, Sunset, Perle des Jardins and Mad. Cuisin, \$1.50; Bon Silene, \$1.00; Niphetos, \$1 to \$1.50. Lily-of-the-Valley, and Roman Hyacinths, bring \$1 per dozen; Mignonette, 50 cts., and Freesia the same per dozen; Heliotrope, Pansies, Carnations, and Forget-me-nots, 35 cts. per dozen. Violets bring from \$1 to \$1.50 per hundred; Lilium Harroii, \$3.00 per dozen; Callas \$2 per dozen, and Lilacs \$2 per bunch of about eight sprays. Daffodils sell briskly at from \$1 to \$1.50 per dozen.

BOSTON, February 23d.

The season of Lent is always looked forward to by the florists with anxiety, for the rest from receptions, assemblies and balls cuts off one of the chief outlets for the choicest flowers: a few warm days are sufficient to overstock the market, and prices take a fall. Buyers are learning, however, that at no period of the year can cut flowers be had in such perfection and variety as during February and March, and although not much required for party occasions they are bought for other purposes in increasing quantities every year, so that the advent of Lent does not now produce utter stagnation in the flower trade. In Roses there is at present a large assortment offered. From the modest Bon Silene, and its new competitor, Papa Gontier, up to the magnificent American Beauty and Hybrid Perpetuals, may be found every gradation of color, size and fragrance. Retail prices vary from 75 cts. per dozen for Bon Silenes and \$1.50 to \$2 for Perles, Niphetos, etc., up to \$3 and \$4 for the best Mermets, Mds and La France; Hybrids and Jacques of best quality bring from 35 to 50 per dozen. In bulbous flowers a large variety is shown. Lily-of-the-Valley sells for \$1.50 per dozen sprays; Narcissus of various kinds, Hyacinths and Tulips for \$1 per dozen; Violets, 50 cts. per bunch; Pansies, Mignonette, Heliotrope, Forget-me-not and Calendulas, 50 cts. per doz. Long stemmed Carnations are to be had in great variety at 75 cts. per dozen; Callas 25 cts. each, and Smilax 50 cts. a string. At this season Smilax is at its best, being its time of flowering, and the flowers are deliciously fragrant.

## Publishers' Note.

A photogravure of Mr. A. St. Gaudens's bronze medallion of the late Professor Asa Gray will be published as a supplement to the second number of GARDEN AND FOREST.



## RARE WATER LILIES

Red, White, Blue, Yellow, Pink, Purple.



**CHOICE AQUATIC PLANTS IN VARIETY.**  
The Largest and Choicest Collection in the Country. The Sacred Lotus of India and China is hardy in the United States; price \$2.50 to \$4.00 each. Grand New Japanese Nelumbiums, rose-colored, \$2.00 to \$3.00 each; white, with red stripes, \$4.00; pure white, \$5.00. **THE TRUE CAPE COD PINK WATER LILY**, \$3.50 each, two for \$6.00. Aquatics for fish-ponds. Catalogue free to those mentioning GARDEN AND FOREST.  
**E. D. STURTEVANT, BORDENTOWN, NEW JERSEY.**

**TREES** SPRING PLANTING.  
We offer the largest and most complete general stock in the U. S., beside many Novelties. Catalogues sent to all regular customers, free. Footpaths: No. 1. Fruit, 10c.; No. 2. Ornamental Trees, etc., illustrated, 15c.; No. 3. Strawberries; No. 4. Wholesale: No. 5. Roses. Free.  
**ELLWANGER & BARRY**  
MT. HOPE NURSERIES, ROCHESTER, New York.

**SIBLEY'S TESTED SEED**  
Catalogue free on application.  
Send for it.  
**HIRAM SIBLEY & CO.,**  
ROCHESTER, N. Y., & CHICAGO, ILL.

For successful Gardening, try  
**BARR'S PROVEN SEEDS**  
**VEGETABLE SEEDS.** The best and most popular sorts in England.  
**FLOWER SEEDS.** The greatest variety offered by any house.  
Descriptive Seed List free on application.  
Seeds and Bulbs shipped to all parts of the world.  
**BARR & SON, COVENT GARDEN, LONDON**

## J. LAING & SONS,

The Nurseries,

FOREST HILL, LONDON,

ENGLAND.

LEADING SPECIALTIES.

TUBEROUS BECONIAS.

AWARDED FOUR GOLD MEDALS.

Gold Medal Collection, quite unrivaled. Tubers in a dry state can be safely transmitted from England until April.

PRICES WHEN SELECTION IS LEFT TO US:

	Per Doz.
A Collection, Named, our best collection	42s.
B " " very choice selection	36s.
C " " choice selection	30s.
D " " very good selection	24s.
E " " good selection	18s.
F " " ordinary selection	12s.
G " Unnamed best selections to color	21s.
H " " very choice selection	18s.
J " " best whites, distinct	15s.
K " " choice selection	12s.
L " " very good, selected to color for bedding	9s.
M " " good best do. per 100, 40s., 6s.	

DOUBLE VARIETIES.

PRICES (OUR SELECTION):

	Per Doz.
P Collection, Named, our best collection, each	7s. 6d. and 10s. 6d.
R " " very choice ditto	63s.
S " " choice ditto	48s.
T " " very good ditto	42s.
W " Unnamed our very choice, selected, distinct	30s.
X " " choice, selected in 6 colors	24s.
Z " " mixed ditto	18s.

BEGONIA SEED.

Gold Medal strain from Prize Plants. New Crop. Sealed packets. Choice mixed, from single varieties, 1s. and 2s. 6d. per packet; 5s. and 10s. extra large packets; double varieties, 1s., 2s. 6d. and 5s. per packet; large packets, 10s. Collections—12 named varieties, single, separate, 5s. 6d.; 6 named varieties, separate, 3s.

CALADIUM ROOTS.

The Finest Collection in the world. Best named varieties, per doz., 30s., 36s., 42s., 48s. and 60s.

GLOXINIA ROOTS.

In dormant state till March. Our unequalled collection. Self colors, and spotted. Best sorts to name, 12s., 18s., 24s., 30s., 36s. and 42s. per doz. Unnamed, very choice, 6s., 9s. and 12s. per doz.

GLOXINIA SEED.

Saved from our Prize Plants: erect flowering, drooping, mixed and spotted, separate, per packet, 1s., 2s. 6d. and 5s.

OTHER FLOWER SEEDS.

The choicest strains of Primula, Cineraria, Calceolaria, Cyclamen, Hollyhock, Dahlia, Pansies, Asters, Stocks, and every other sort.

All kinds of Plants, Roses, Fruit Trees, etc. that can be imported from England, safely transmitted in Wardian cases.

Remittances or London References must always accompany orders. Flower Seeds by post. Orders should reach us soon as possible.

CATALOGUES GRATIS AND POST FREE.

## PLANTS AND TREES SEEDS

GRAPE VINES, FRUIT & ORNAMENTAL TREES  
*Rarest New. Choicest Old.*

The aim of **THE STORRS & HARRISON CO.** is to keep abreast of the times and supply their customers all that is new and desirable in their line; and it is conceded by all that no house in America carries a more varied and complete stock. If you want Choice Tested FLOWERS and VEGETABLE SEEDS sure to give satisfaction, Grand Roses and Beautiful Plants, the best of Apple, Peach, Pear, Plum, Cherry, Quince, Grapes, Small Fruits, Ornamental Trees or Shrubs, for lawn, garden, park or street, do not fail to send for their Valuable CATALOGUE, containing about 140 pages and hundreds of illustrations. They are conducting business on a magnificent scale, growing a quarter of a million of Roses and millions of Fruit Trees and Plants annually. Have been in business over a third of a century and have won a reputation of which they have reason to be proud. Have 24 large Greenhouses heated with hot water and steam, and are using 700 acres of land. If you want the best at lowest prices, order directly of them and save all commissions. Address **THE STORRS & HARRISON CO., PAINESVILLE, LAKE CO., OHIO.**

## BEAUTIFUL TREES.

For lawn and cemetery planting. These can now be furnished in great variety, from our extensive collection, at reduced prices.

We have now on hand a large supply of the following rare Beeches, all of which have been recently transplanted, and are in consequence abundantly furnished with fine roots:—

### PURPLE-LEAVED BEECH.

From 6 to 10 feet high; elegant specimens. All were grafted from the beautiful "Rivers' variety," so justly celebrated for the intense blood-red color of its foliage.

### WEeping BEECH.

From 6 to 10 feet high, suitable for immediate effect, and well supplied with decidedly pendulous branches.

### CRESTED and FERN-LEAVED BEECHES.

We offer a superb stock of these, averaging in height from 5 or 6 to 10 feet, all well rooted and nicely furnished.

### In EVERGREENS

We have now in stock a large supply of American, Siberian and Golden Arbor Vitae, Balsam Firs, Hemlocks and Norway Spruce—good, young, healthy plants, especially desirable for screens and hedges.

### In SHRUBBERY

Our assortment is very complete, embracing many rare and elegant species. Our immense stock of some kinds enables us to accept orders at very low rates.

**HOOPES, BRO. & THOMAS,**  
Maple Avenue Nurseries,  
WEST CHESTER, PA.



## DREER'S GARDEN CALENDAR

Jubilee Edition 1888.  
Established 1838. In celebrating our golden anniversary, we will make a present of one packet of Dreer's Golden Cluster Wax Beans to every one who mentions this paper and remits 15c. in stamps to cover cost of finest catalogue ever issued of Seeds, Plants, Bulbs, and every garden requisite, containing two colored plates and hundreds of engravings. Concise directions for cultivation. Valuable to all who plant seeds.  
**HENRY A. DREER,**  
714 Chestnut St., Philada.

**H. W. S. CLEVELAND,**  
LANDSCAPE GARDENER,  
221 SECOND AVE. S.,  
MINNEAPOLIS, MINN.

**CHARLES ELIOT,**  
Landscape Gardener  
9 PARK ST., BOSTON.



## GOLD MEDAL, PARIS, 1878. BAKER'S Breakfast Cocoa.

Warranted absolutely pure Cocoa, from which the excess of Oil has been removed. It has three times the strength of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, costing less than one cent a cup. It is delicious, nourishing, strengthening, easily digested, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

**W. BAKER & CO.,** Dorchester, Mass.



## SCRIBNER'S MAGAZINE

FOR  
MARCH CONTAINS

**BLÜCHER UNHORSED AT LIGNY.**  
Drawn by R. F. Zogbaum. Engraved by Peckwell.

**THE CAMPAIGN OF WATERLOO.** By JOHN C. ROPES. With illustrations by R. F. Zogbaum, and drawings made by W. T. Smedley, especially commissioned by this Magazine to visit the field. A strikingly original history of this greatest of military events. A concluding article, beautifully illustrated, will appear in April.

**BEGGARS.** The third of the series of charming essays by ROBERT LOUIS STEVENSON. The New York Tribune says in referring to this series:

"The matter is of itself enough to interest every person in the least interested in literature, and the manner of it is such as to make us ask again of him for the hundredth time, as it was asked of Macaulay, 'Where did he get that style?'"

**A SHELF OF OLD BOOKS.**—LEIGH HUNT. By MRS. JAMES T. FIELDS. Illustrated with drawings, portraits and fac-similes. A charming account of some of the literary treasures owned by the late James T. Fields.

**THE ELECTRIC MOTOR AND ITS APPLICATIONS.** By FRANKLIN LEONARD POPE. With 14 illustrations. Mr. Pope describes the great advances recently made by which electricity takes the place of steam, or supplements it in so many directions.

**THE NIXIE.** A Fantastic Story. By MRS. ROBERT LOUIS STEVENSON.

**MENDELSSOHN'S LETTERS TO MOSCHELES.** From the MSS. in the possession of Felix Moscheles. By WILLIAM F. APTHORP, II. (Conclusion.) With portraits, reproductions of drawings, musical scores, etc.

"The letters are full of interest, especially in their frank observations on musical affairs of Mendelssohn's day."—*Boston Saturday Evening Gazette.*

**THE DAY OF THE CYCLONE.** A stirring Western story, founded on the Grinnell (Ia.) tornado. By OCTAVE THANET.

**FIRST HARVESTS.**—Chapters VII-X. By F. J. STIMSON. (To be continued.)

**NATURAL SELECTION.**—A Novelette in Three Parts. By H. C. BUNNEN. (Conclusion.) With Illustrations.

**POEMS.** By THOMAS NELSON PAGE, C. P. CRANCH, BESSIE CHANDLER, and CHARLES EDWIN MARKHAM.

"In its one year of life, SCRIBNER'S MAGAZINE has taken not only an exalted and permanent place in periodical literature, but one that the world could in no sense spare."—*Boston Traveller.*

A year's subscription, consisting of twelve monthly numbers, gives more than 1,500 pages of the best, most interesting, and valuable literature. More than 700 illustrations from designs by famous artists, reproduced by the best methods.

Price, 25 cents. \$3.00 a year.

CHARLES SCRIBNER'S SONS,

743-745 Broadway, New York.

### A Brilliant New Novel by the author of "The Story of Margaret Kent." QUEEN MONEY.

1 vol., 12mo, \$1.50.

"This is the strongest story that this author has yet told. It is essentially a novel of character-painting, more even than 'Margaret Kent' or 'Sons and Daughters'. It is superior to either of these. The merits of 'Queen Money' are very great.... Interesting and valuable and remarkably true to life. It is a book to be quoted, to be thought about, to be talked about."

### LOOKING BACKWARD.

2000-1887. By EDWARD BELLAMY, author of "Miss Ludington's Sister." \$1.50.

"'The Duchess Emilia' and 'She' are not more strange than this story."

### UNDER THE SOUTHERN CROSS.

By M. M. BALLOU, author of "Due North," "Edge-Tools of Speech," etc. \$1.50.

A journey, in 1887, to Australia, Tasmania, Samoa, New Zealand, and other South-Sea Islands.

For sale by all booksellers, or will be sent, post free, on receipt of price by

TICKNOR & CO., Boston.

## The Sun.

FOR  
1888.

The year 1888 promises to be a year of splendid political developments, one and all redounding to the glory and triumph of a

## UNITED DEMOCRACY.

In the Front Line will be found

### THE SUN,

Fresh from its magnificent victory over the combined foes of Democracy in its own State, true to its convictions, truthful before all else, and fearless in the cause of truth and right.

THE SUN has six, eight, twelve, and sixteen pages, as occasion requires, and is ahead of all competition in everything that makes a newspaper.

Daily, - - - - -	\$6 00
Daily and Sunday, - - - - -	7 50
Sunday, 16 and 20 pages, - - - - -	1 50
Weekly, - - - - -	1 00

Address THE SUN, New York.

## YOUNG & ELLIOTT'S SPECIAL COLLECTION OF CHOICE FLOWER SEEDS

### THAT EVERYBODY CAN GROW.

For 50 CENTS in cash or postage stamps we will mail FREE to any address, one packet of each of the following beautiful annuals:—Aster; Peony Perfection, finest double mixed colors; Cosmos hybridus, (see cut), splendid showy plant; Chrysanthemum segetum grandiflorum; the Golden Marguerite; Calendula Prince of Orange, orange yellow, very showy; Dianthus "Eastern Queen;" beautiful new Pink; El Dorado Marigold, magnificent large flowers; Tom Thumb Nasturtium, beautiful mixed sorts, very bright and attractive; Pansy, fine mixed, everybody's favorite; Pinks Drummond's grandiflora, new large flowering; Petunia, choice striped and blotched; Poppy Danebrog, brilliant scarlet and white; Portulaca, double and single, brilliant colors; Stock Gil-lyflower, ten weeks, best mixed; Sweet Peas, beautiful colors in great variety; Thunbergia mixed, extremely ornamental climbers.

### 15 PACKETS FOR 50 CTS.

These are all really good things, which cannot fail to please. The seeds have been selected with great care, and are the finest of their kind. We shall be pleased also to mail a copy of our Catalogue and Garden Annual for 1888 to all buyers of the above collection, and to all others who wish to buy the choicest strains of Flower and Vegetable Seeds.

YOUNG & ELLIOTT, Seedsmen, 54 & 56 Day Street, NEW YORK



## THE UNITED STATES MUTUAL ACCIDENT ASSOCIATION

is offering the very best accident insurance at cost. \$5,000 for death by accident, \$25 weekly indemnity, and liberal indemnity for loss of eye or limb. Costs \$13 to \$15 per year.

Membership Fee, \$5.

320 & 322 Broadway, New York.

Charles B. Peet,  
President.

James R. Pitcher,  
Secretary and Gen'l Manager.

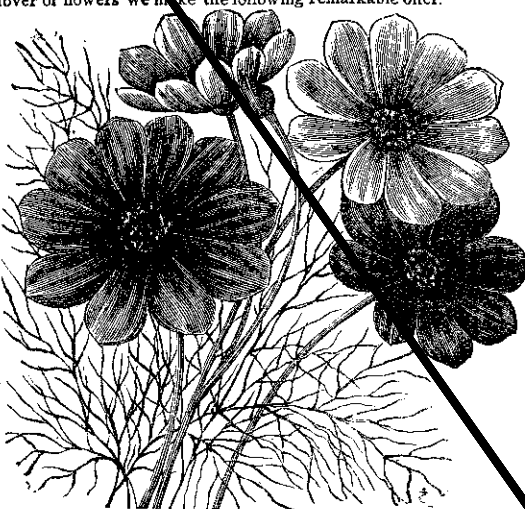
## FOR SPRING PLANTING.

Rhododendrons,  
Azaleas,  
Japanese Maples,

And all other hardy Ornamental Trees, Street Trees, Evergreens, Shrubs, Roses and Vines of selected quality, in quantity, at lowest rates; also, all the best Fruits. Priced Catalogue on application.

FRED. W. KELSEY,

208 Broadway, NEW YORK.



## SOME WORKS ON NATURAL SCIENCE

PUBLISHED BY HENRY HOLT &amp; CO., NEW YORK.

## PACKARD'S (A. S.) WORKS.

GUIDE TO THE STUDY OF INSECTS.....	\$5 00
OUTLINES OF COMPARATIVE EMBRI- OLOGY.....	2 50
ZOOLOGY—ADVANCED COURSE.....	3 00
ZOOLOGY—BRIEFER COURSE.....	1 40
FIRST LESSONS IN ZOOLOGY.....	1 00

## BESSEY'S (C. E.) WORKS.

BOTANY—ADVANCED COURSE.....	\$2 75
ESSENTIALS OF BOTANY.....	1 35

## SEDGWICK (W. T.) AND WILSON'S (E. B.)

GENERAL BIOLOGY—PART I.....	\$2 00
-----------------------------	--------

## ARTHUR (J. C.), BARNES (C. R.) AND COULTER'S (J. M.)

PLANT DISSECTION.....	\$1 50
-----------------------	--------

## Gray's Botanical Text Books.

At once the most complete  
and the best Botanical  
series published,

COMPRISING:

Gray's How Plants Grow,  
Gray's How Plants Behave,  
Gray's Lessons in Botany,  
Gray's Field, Forest and Garden  
Botany,  
Gray's School and Field Botany,  
Apgar's Plant Analysis,  
Gray's Manual of Botany,  
Gray's Lessons and Manual,  
Gray's Structural Botany,  
Goodale's Physiological Botany,  
Gray's Structural and Systematic  
Botany,  
Coulter's Manual of the Rocky  
Mountains,  
The same, Tourist's Edition,  
Gray and Coulter's Manual of  
Western Botany,  
Gray's Synoptical Flora—The Gam-  
mopetalæ,  
Chapman's Flora of Southern U. S.

Send for our new descriptive  
pamphlet of Gray's Botanies, con-  
taining PORTRAIT AND BIO-  
GRAPHICAL SKETCH of the  
Author.

Books for introduction or exam-  
ination furnished on very favor-  
able terms.

IVISON, BLAKEMAN & CO.,

753-755 Broadway, New York,

AND

149 Wabash Ave., Chicago.

## A Few Flowers Worthy of General Culture.



December, 1887, encourages us greatly in our efforts to popularize the Hardy Flowers so loved by our grandmothers, together with many fine plants of more recent introduction.

As we were the first in this country to gather a fine collection of Hardy Plants from all quarters of the earth, and to offer them when there was but small demand for such, we are pleased indeed that so much attention is now being given to them, feeling that our efforts in behalf of the almost forgotten hardy plants, will tend to the creation of gardens more permanent and beautiful, and at much smaller outlay than many that can be made with tender plants.

The fifth edition of our book is now ready. It is the largest and best work on hardy plants published in this country, and contains many finely illustrated articles, among which are, "A Talk about Roses;" "Hardy Plants and Modes of Arranging Them;" "The Making of the Hardy Border;" "Some Beauties in their Native Wilds;" "Rhododendrons, Kalmeas and Hardy Azaleas;" "Hardy Aquatic Plants;" "Tropical Garden Effects with Hardy Plants;" "A Garden Party;" etc., etc.

The book is finely printed on the best of paper, is of real merit and rare beauty, and will be sent post-paid, bound in durable flexible covers for 50 cents, or in leather for 75 cents, but the price paid will be allowed on the first order for plants, making the book really free to our customers.

Our descriptive catalogue, containing a complete descriptive list of the best and largest collection of Hardy Plants in America, sent on receipt of 10 cents in stamps.

Our special list of valuable, low-priced, well-grown plants mailed upon application.

B. A. ELLIOTT CO., No. 56 Sixth Street, Pittsburgh, Pa.

New Seeds, Bulbs, Plants, Fruits.—Rare Tropical Fruits.

### GRAND PALMS FROM SEED.



FILIFERA PALM.

Primrose Verbena Seed and Catalogue. Write at once as this offer may not appear again. To every order we will add an elegant Seed or Bulb novelty free. Address,

JOHN LEWIS CHILDS, FLORAL PARK, QUEENS CO., N. Y.

## CHRYSANTHEMUMS A SPECIALTY.

Our catalogue for Spring of 1888, contains a select list of New and Old Chrysanthemums, including:

"MRS. ALPHEUS HARDY,"

the beautiful variety figured in this paper.

Also a collection of Fine Flowering Cannas.

EDWIN FEWKES & SON,  
NEWTON HIGHLANDS, MASS.



A REAL BONANZA IN SEEDS.—Being one of the largest growers of Flower Seeds in America, I want to make an extensive trial, and for 45 cts. will send, postpaid, 32 papers Choice New Seeds, grown of '87, 75 to 500 seeds & mixed colors in each. New Large A. Fancy Pansies, the finest ever offered, (Guaranteed Special Price by Seed Growers Society) 60 distinct sorts and an endless variety of rich colors, all mixed; Double Asters; Japan Pinks, 50 vars. mixed; Large P. Phlox; Double Portulaca; New Godekias; New White Mignonette; New Nicotiana; Everlasting; New Giant Candytuft; V. Stocks; New Mari-golds; Mottled, Striped and Fringed Petunias; Verbena, 50 vars. mixed; New Golden Chrysanthemums; Double Larkspurs; Yellow; New Yellow Mignonette; Double Gaillardia; New Double Dwarf Zinnias; Double Silene; New Double White Aster, the finest white ever offered; Butterfly; Double Daisies; & 8 other choice kinds, amounting to \$2.75 at regular rates, but to introduce the whole 32 papers for only 45 cts. This is an honest, square offer, but if you doubt it, send 15 cts. or 8 letter stamps, and I will send you 7 sample papers, my choice, but including Pansies, Asters and Improved Prize Sweet Williams, 50 vars. mixed. Am sure a trial will prove all claims. New Catalogue free. L. W. GOODELL, Floral Park, Dwight P. O., Mass.

# The Popular Science Monthly,

Edited by W. J. YOUMANS,

Is filled with scientific articles by well-known writers on subjects of popular and practical interest. Its range of topics, which is widening with the advance of science, comprises:

Domestic and Social Economy.

Political Science, or the Functions of Government.

Psychology and Education.

Relations of Science and Religion.

Conditions of Health and Prevention of Disease.

Art and Architecture in Practical Life.

Race Development.

Agriculture and Food-Products.

Natural History; Exploration; Discovery, etc.

It contains Illustrated Articles, Portraits, Biographical Sketches; records the advance made in every branch of science; is not technical; and is intended for non-scientific as well as scientific readers.

No magazine in the world contains papers of a more instructive and at the same time of a more interesting character.

Single number, 50 cents.

Yearly subscription, \$5.00.

D. APPLETON & CO., Publishers, New York.

## POINTS TO ADVERTISERS.

Nothing is sold without pushing, unless it has a monopoly.  
No two articles can be pushed in exactly the same way. In advertising you want to reach possible customers, not merely people.  
The best mediums for one line of goods may be the worst for another.  
Advertising should not be visionary, it should not be attended to as a mere pastime.  
Success means thought, the day of chance successes is nearly over.  
It costs no more to publish good matter than it does poor.  
The preparation of an advertisement is as important as the publishing.  
An advertiser needs an agent, as a client does a lawyer. The agent, however, asks no retainer and saves his customer money.  
A merchant cannot study advertising all the time—a good agent studies nothing else.  
The customer's interests are the agent's. If the agent is to succeed, the business done must be successful.  
The undersigned want business, but not badly enough to handle what is "questionable."  
They are honest and capable, their customers say, and they give close personal attention to their business.

HERBERT BOOTH KING & BROTHER,

ADVERTISING AGENTS,

202 Broadway, N. Y.

(Copyright, 1887.)

Send for Circulars.

## A VALUABLE WORK UPON

## AMERICAN TREES,

Which should be in every Library in the United States.

Fourth Edition, Just Ready. Price Reduced.

## EMERSON'S TREES AND SHRUBS.

THE TREES AND SHRUBS GROWING NATURALLY in the Forests of Massachusetts. By GEORGE B. EMERSON. Fourth Edition. Superbly illustrated with nearly 150 plates (46 beautiful heliotypes and 102 lithographs), 2 vols. 8vo. Cloth. Price, \$10.00 net; formerly \$12.00 net.

THE SAME, with 36 of the plates beautifully colored. Price, \$16.00 net; formerly \$20.00 net.

Though this work is nominally treats of the trees and shrubs of Massachusetts, it is equally applicable to the flora of many other States; indeed all New England and a greater part of the Middle States. In it is described every important tree or shrub that grows naturally in Massachusetts and in other States of the same latitude, the descriptions being the result of careful personal observation. It is, indeed, a comprehensive and convenient manual for almost every section of the Union.

The illustrations of these volumes constitute one of their most important and attractive features. A large number of the plates are by the eminent authority on this subject, ISAAC SPRAGUE.

Volume I. treats of the Pines, Oaks, Beeches, Chestnuts, Hazels, Hornbeams, Walnuts, Hickories, Birches, Alders, Plane Trees, Poplars, and Willows.  
Volume II. treats of the Elms, Ashes, Locusts, Maples, Lindens, Magnolias, Liriodendrons, and the shrubs.

LITTLE, BROWN, AND COMPANY, Publishers

254 WASHINGTON STREET, BOSTON.

## HOUGHTON MIFFLIN & CO'S

Beautiful New Books.

### BIOGRAPHY.

**Memoir of Ralph Waldo Emerson.**  
By JAMES ELLIOT CAROT. With a fine new steel Portrait. 2 vols. 12mo, gilt top, \$3.50.

**Henry Clay.**

Vols. XV. and XVI. in series of American Statesmen. By CARL SCHUEZ. 2 vols. 16mo, gilt top, \$2.50; half morocco, \$5.00.

**Patrick Henry.**

Vol. XVII. of American Statesmen. By MOSES COIT TYLER. 16mo, gilt top, \$1.25.

**Benjamin Franklin.**

Vol. X. of American Men of Letters. By JOHN BACH MCMMASTER, author of "A History of the People of the United States." With a steel Portrait. 16mo, gilt top, \$1.25.

### NOVELS AND SHORT STORIES.

**The Second Son.**

By Mrs. M. O. W. OLIPHANT and THOMAS BAILEY ALDRICH. 12mo, \$1.50.

**The Gates Between.**

By ELIZABETH STUART PHILIPS, author of "The Gates Ajar," "Beyond the Gates," etc. \$1.25.

**Paul Patoff.**

By F. MARION CRAWFORD, author of "A Roman Singer," etc. Crown 8vo, \$1.50.

**Jack the Fisherman.**

A powerful and pathetic temperance story. By ELIZABETH STUART PHILIPS. 50 cents.

**Knitters in the Sun.**

A book of excellent Short Stories. By OCTAVE THANET. 16mo, \$1.25.

**A Princess of Java.**

A novel of life, character and customs in Java. By Mrs. S. J. HIGGINSON. 12mo, \$1.50.

**The Story of Keodon Bluffs.**

By CHARLES EGBERT CRADDOCK. A story for Young Folks, and Older Ones. \$1.00.

**A New Book by Bret Harte.**

"A Phyllis of the Sierras," and "A Drift from Redwood Camp." \$1.00.

\* \* For sale by all Booksellers. Sent by mail, post-paid, on receipt of price by the Publishers,

HOUGHTON, MIFFLIN & CO., BOSTON.

11 EAST 17TH STREET, NEW YORK.

## Shady Hill Nurseries, Cambridge, Mass.

## THE SOURCE OF NOVELTIES IN ORNAMENTALS!

The New **TREE LILAC** (*Syringa Japonica*) was first grown commercially, and first sold from Shady Hill Nurseries.

The Beautiful **WEBBING LILAC** (*Syringa ligustrina Pekinensis pendula*), called by Mr. Samuel B. Parsons, at the American Pomological Convention, at Boston (where it was first exhibited and received a first-class Certificate of Merit from the Mass. Hort. Society), "the most beautiful of all our small Weeping Trees." This also will be sent out in the autumn of this year.

Here also is grown, in large numbers, the lovely little flowering tree, called the "**TEA ROSE CRAB**," the most exquisite of all our flowering trees. Ten thousand of this tree have been ordered by Messrs. V. H. Hallock & Son.

Here originated the **Hardy Perennial Gaillardia** (*G. Aristata Templeana* of Peter Henderson's new catalogue), the most showy and only hardy Gaillardia of this latitude.

A full descriptive catalogue, of all the things grown at Shady Hill, will be issued in February, fully illustrated with engravings and containing four full page lithographs, in eight colors, of the four new trees, viz.: "Tea Rose Crab," Tree Lilac, Weeping Lilac, and the Fastigiate Maiden Hair Tree. This will be sent free to all who will send address.

## F. L. TEMPLE, Cambridge, Mass.

### JOHN SAUL'S WASHINGTON NURSERIES.

Our Catalogue of new, rare and beautiful Plants for 1888 will be ready in February. It contains list of all the most beautiful and rare Green-house and Hot-house Plants in cultivation, as well as all novelties of merit. Well grown and at very low prices. Every Plant lover should have a copy.

**ORCHIDS.**—A very large stock of choice East Indian, American, etc. Also, Catalogues of Roses, Orchids, Seeds, Trees, etc. All free.

JOHN SAUL, Washington, D. C.

### WESTERN N. C. ORNAMENTAL SHRUBS AND TREES.

Descriptive Price List sent on application. Detailed description of the new *Rhododendron Vaseyi*, with each List. *Azalea arborescens* is one of our specialties. Correspondence solicited.

KELSEY BROS., HIGHLANDS NURSERY, Highlands, N. C.

**GARDENERS.**—Thorough, practical man, wants situation to take charge of a good private place or institution; 29 years' experience in Europe and U. S.; English, age 35, married, one of family; first-class reference. Address J. S., care H. A. Dreer, 714 Chestnut St., Philadelphia, Pa.

**GOLD STRAWBERRY**, a new Berry of very fine quality, now offered for the first time. Also, **JEWELL JESSIE BEAUMONT**, and other varieties. Address, P. M. AUGUR & SONS, Originators, MIDDLEFIELD, CONN.

**NEW PLANTS.** Our illustrated Floral Catalogue of new, rare and beautiful Plants, Orchids, Palms, Roses, Bulbs, Vines, Trees, Shrubs and Seeds, also, all the Novelties of the season, now READY. Every lover of plants should have a copy. Prices low. Send for it; FREE to all. PAUL BUTZ & SON, New Castle, Pa.



YOU are about to write for a catalogue. No doubt you want the best—the truest descriptions, the clearest notes on plant culture, plainest type and most beautiful illustrations. We have put forth every effort to make ours such. Those who have seen it, say it is. It tells many reasons why you can buy SEEDS and Plants—so many of which are grown on the Western prairies—better and cheaper at CHICAGO than you can elsewhere. Then why not do so? Our Chicago Parks Flowers and Plants; our Market Vegetables, and our Gardening Implements make up a book that

### TELLS THE WHOLE STORY,

and is a work of art which will please you. Send 15 cents and receive the catalogue and a paper of the above seeds free.

**J. C. VAUGHAN, CHICAGO.**  
88 STATE STREET,

## MEEHAN'S NURSERIES.

Though with the usual assortment of Fruits and Flowers found in all leading Nurseries, we pay especial attention to Ornamental Trees. We have nearly fifty acres of these alone, and well on to a thousand varieties.

**JAPAN MAPLES. and JAPAN SNOWBALL**  
—A SPECIALTY.—

SEND SIX CENTS IN STAMPS FOR DESCRIPTIVE CATALOGUE.

**THOMAS MEEHAN & SON,**  
Germantown, Philadelphia, Pa.



JAPAN SNOWBALL.

## ORCHIDS

Palms and Fine Tropical Plants.

We have the most complete collection of fine plants in the country.

Descriptions of specimens and a general catalogue of stock can be had on application either at

409 5th Avenue, New York City,

OR AT THE

ROSE HILL NURSERIES, NEW ROCHELLE, N. Y.

**SIEBRECHT & WADLEY.**

## CHRYSANTHEMUMS.

THE VERY CREAM. WARRANTED TRUE TO NAME.

Healthy, vigorous plants in the finest possible condition.

Send for my little book free, containing all particulars.

**T. H. SPAULDING,**  
WEST ORANGE, N. J.



**1888 POMONA NURSERIES 1888**  
Perry, Lida and Bomba Strawberries, Marlboro and Golden Queen Raspberries, Wilson Jr., Erie and Minnewaski Blackberries, Niagara, Empire State and Moore's Early Grapes, Lawson, Kieffer and LeConte Pears, Wonderful and Globe Peach, Spaulding and Japan Plums, Delaware Winter and Red Cider Apples. All the worthy old and promising new varieties. Catalogue Free.  
**WM. PARRY, PARRY, N. J.**

## FARQUHAR'S SEEDS

Cultivators who want the CHOICEST Flowers and Vegetables, please write for our new Catalogue. It describes many rare and choice specialties of great merit, offered only by us, at very moderate prices. Our business is among the best horticulturists in America, and the quality of our seeds is unsurpassed. Catalogues (in elegant steel-blue and gold cover, with fine color work) FREE TO ALL.

THE FOLLOWING ARE SPECIALLY FINE. POSTAGE FREE.

Primula obconica, pkt. 40c.; Turner's Carnations, pkt. 50c.; Cineraria hybrida, new large-flowering, pkt. 50c.; Cyclamen, new large-flowering, mixed colors, pkt. 50c.; Gloxinia, new large upright-flowering, pkt. 50c.; Pansy, Farquhar's Show flowers, mixed, pkt. of 100 seeds, 25c.; Sweet Peas, Kent-grown, superior to all, mixed colors, ounce, 10c., pound, \$1.00; Nasturtiums, Running, Kent-grown, mixed, extra fine, ounce, 15c., pound, \$1.75.

PINK POND LILY ROOTS (*Nymphaea odorata rosea*). New, hardy; the finest hardy aquatic. Strong roots, \$2.50 each, postage paid.

**R. & J. FARQUHAR & CO.,**  
Importers, Growers and Dealers in  
Reliable Seeds, Bulbs, Etc.,  
16 & 19 So. Market St., Boston, Mass.

## THE NEW MODEL

—OUR—  
LATEST AND BEST  
MOWER.



For Simplicity, durability, and quality of work it is unequalled, while for Lightness of draft it excels by a large percentage, any other Lawn Mower made.  
**CHADBORN & COLDWELL MANUFACTG CO.**  
NEWBURGH, N. Y.

## TRIED BY TIME.



PRACTICAL people are well pleased with the recent development in horticultural journalism by which the young **AMERICAN GARDEN** absorbed the old *Gardener's Monthly*, which included the *Horticulturist*, started by Andrew Jackson Downing, over forty-two years ago.

I told our local society just what I really think the other day, that you come the nearest my ideal of a Horticultural Monthly for popular circulation of any of the makers of such literature.—CHAS. W. GARFIELD, Sec'y Michigan Horticultural Society.

The magazine is now clearly the best horticultural publication in America, and soon I trust I can say the best extant.—Dr. E. LEWIS STURTEVANT.

As much as I regret the melting away of that old landmark, the *Gardener's Monthly*, of which I was a reader since 1861, as glad I feel that the transfer has been made into good hands.—R. MATTRE, Florist, New Orleans.

I have been a subscriber to the *Gardener's Monthly* from its first number. I feel sorry that the journal is going away from Philadelphia, but am glad it has gone into such good hands.—CHAS. H. MILLER, Landscape Gardener, Fairmount Park.

Indispensable to the fruit growers, horticulturists, gardeners and florists (both practical and amateur) of this country.—CYRUS T. FOX, State Pomologist of Pennsylvania.

It is a lamentable failing of horticultural educators in making the work intricate and apparently hard of execution. Your new cover is in perfect accord with the contents, viz.: It expresses and teaches horticulture pure and simple.—GEO. R. KNAPP, Rahway, N. J.

Adapted to the wants of Amateurs, Country Dwellers, Practical Gardeners and Fruit Growers, **THE AMERICAN GARDEN** has stood the test of Time, the great leveler, and receives the endorsements and support of all these classes in every section and many lands.

The equal in cost and value of many \$2 and \$3 publications, this handsome and practical illustrated magazine of horticulture costs only \$1.00 a year. In Club with *Garden and Forest* for \$4.50. Address:

**E. H. LIBBY, Publisher, 751 Broadway, N. Y.**

## The American Florist,

A SEMI-MONTHLY JOURNAL

For florists, and all who grow plants or flowers under glass. It prints nothing but hard common-sense matter, the experience of practical men who have been there themselves and know what they are talking about.

Liberally Illustrated. Price, \$1.00 a Year of 24 Numbers.

SAMPLE COPY 6 CENTS IN STAMPS.

**American Florist Co., 54 La Salle St., Chicago.**

## FOREST TREES.



Catalpa speciosa, White Ash, European Larch, Pines, Spruces, Arbor Vitae, etc., etc. *Catalpa speciosa* Seed. Forest and Evergreen Seeds, *Pinus pungens*, and *Psotsuga Douglasii* of Colorado. Two of the finest and hardiest Conifers in cultivation.

**R. DOUGLAS & SONS, - - Waukegan, Ill.**

## ROCHESTER COMMERCIAL NURSERIES.

Address  
**W. S. LITTLE**  
Rochester,  
N. Y.



NEW and RARE OLD and RELIABLE

Both Fruit and Ornamental. ROSES, Vines, Clematis, Rhododendrons, etc. Two illus. Catalogues 6 cts. Free to customers. Wholesale List, FREE.



RED FLOWERING DOGWOOD,  
WEeping DOGWOOD,  
WEeping BEECH,  
PURPLE BEECH,  
CHINESE CYPRESS,  
YELLOW WOOD,  
JAPAN GINGKO,  
GOLDEN  
OAK.

MAGNOLIAS,  
NEW CONIFERS,  
JAPANESE MAPLES,

◀ JAPANESE UMBRELLA AND SUNRAY PINES ▶

EXOCHORDA GRANDIFLORA,  
EUONYMUS LATIFOLIUS,  
BERBERIS THUNBERGII,  
GOLDEN SYRINGA,  
JAPAN QUINCE,  
HYDRANGEAS,  
SPIREAS,  
GOLDEN  
ALDER.

## ◆ New and Rare Trees and Shrubs, ◆

FRUIT  
TREES,  
SMALL FRUITS,  
TREE PÆONIES,  
ROSES IN VARIETY,  
AMERICAN HOLLY,  
HERBACEOUS PÆONIES,  
SHADE TREES & HEDGE PLANTS.

**RHODODENDRONS,**

CHINESE AZALEAS,

HARDY AZALEAS,

CAMELLIAS.

YEWs,  
JUNIPERS,  
HEMLOCKS,

ARBOR VITÆ,

RETINOSPORAS,

DWARF, BLUE, CONICAL,

WEeping AND OTHER SPRUCES,

ASSORTMENT OF PINES.

Plans Made, Estimates Furnished, Grounds Laid Out, Catalogues on Application.

**PARSONS & SONS COMPANY, Limited,**

Kissena Nurseries,

ESTABLISHED 1839.

FLUSHING, N. Y.

## Seeds, Seeds, Seeds.

To our friends who have not  
already received it, we are ready  
to mail our

**NEW CATALOGUE**

OF

**HIGH CLASS SEEDS**

FOR 1888,

Containing all the Novelties of  
the Season, both in VEGETABLE,  
FLOWER and TREE Seeds.

**J. M. Thorburn & Co.,**

15 JOHN STREET,

NEW YORK.

## OUR MANUAL OF EVERYTHING FOR THE GARDEN



$\frac{2}{3}$  Natural Size.

Is this season the grandest ever issued, containing three colored plates and superb illustrations of everything that is new, useful and rare in Seeds and Plants, together with plain directions of "How to grow them," by PETER HENDERSON. This Manual, which is a book of 140 pages, we mail to any address on receipt of 25 cents (in stamps.) To all so remitting 25 cents for the Manual, we will, at the same time, send free by mail, in addition, their choice of any one of the following novelties, the price of either of which is 25 cents: One packet of the new Green and Gold Watermelon, or one packet of new Succession Cabbage, or one packet of new Zebra Zinnia, or one packet of Butterfly Pansy (see illustration), or one packet of new Mammoth Verbena, or one plant of the beautiful Moonflower, on the distinct understanding, however, that those ordering will state in what paper they saw this advertisement.

**PETER HENDERSON & CO. 35 & 37 Cortlandt St., NEW YORK.**



**W. W. RAWSON & CO.**

34 South Market Street, Boston, Mass.

IMPORTERS AND GROWERS OF

**GARDEN, FIELD & FLOWER SEEDS**

Successors to B. K. Bliss & Sons, formerly of New York.

Our large and profusely illustrated Catalogue for 1888 has been made still more attractive by the addition of richly illuminated cover, a beautiful colored plate, and numerous life-like illustrations of rare and beautiful flowers and choice vegetables, including many novelties of rare merit, will be mailed free to customers of last year, and to all others, upon receipt of Ten Cents, in exchange for which they will receive, in addition to a copy of the Catalogue, a 25-cent packet of "Rawson's Choice Mixed Pansy Seed," or a 25-cent packet of Rawson's New Early Cabbage.

"VOLUNTEER"—the earliest variety known, provided they will state the name of the paper in which they saw this advertisement. B. K. Bliss, surviving partner of B. K. Bliss & Sons, is now with us, and respectfully solicits the patronage of former customers.

**NEW BOOKS ON GARDENING.**

**CELERY AND ITS CULTIVATION**, by W. W. Rawson, 25 Cents.  
**SUCCESS IN MARKET GARDENING** and Vegetable Growers' Manual, by W. W. Rawson. Practical Market Gardener. The most instructive work of the kind ever published, full of important information to market gardeners, and to all growers of vegetables in large or small quantities. 200 pages, fully illustrated, sent post paid, by mail, upon receipt of \$1.00.

**BOTANY CLASSES** furnished with fresh plants and flowers from the Southern Mountains, including all the AZALEAS and RHODODENDRONS found east of the Rockies. I can furnish Rhododendron Vaseyi and Shortii galacifolia, and other rare plants. Order Shortii early, as it blooms in March and April.

**T. G. HARBISON,**  
Principal of Highlands Academy, Highlands, N. C.